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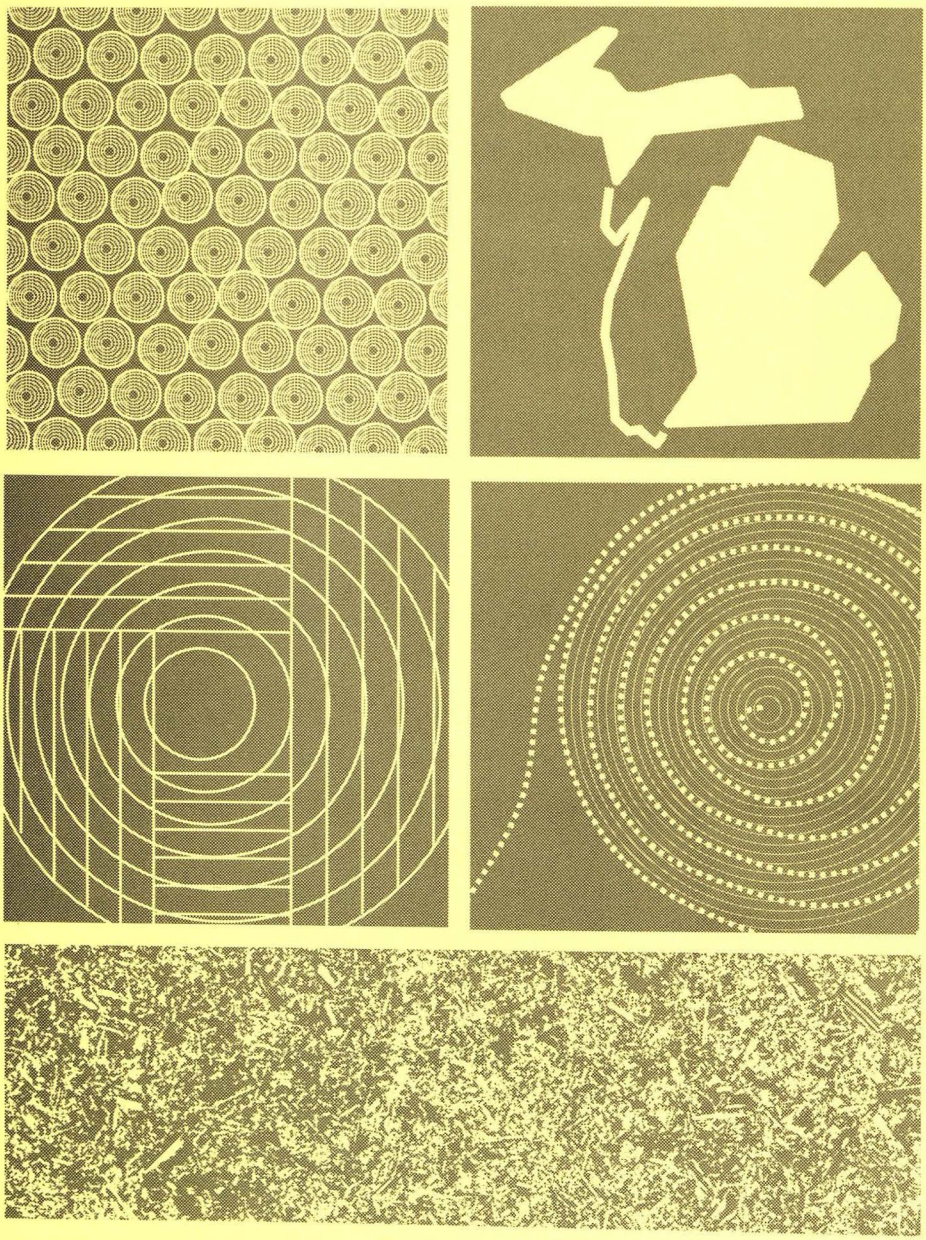
Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1990

Ronald L. Hackett and John Pilon



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FOREWORD

In this bulletin we discuss recent Michigan forest industry trends and report the results of a detailed study of forest industry, industrial roundwood production, and associated primary mill wood and bark residue in Michigan in 1990. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information for planning projects.

Special thanks are given to the primary wood-using firms that supplied information for this study and to the Michigan Department of Natural Resources foresters who canvassed these respondents. Their cooperation is greatly appreciated.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all saw-log volume reported in Scribner Decimal C scale by sawmills, a multiplier of 1.04 to all veneer log volume reported in Scribner Decimal C scale by veneer mills, a multiplier of 1.38 to all saw-log volume reported in Doyle scale by sawmills, and a multiplier of 1.14 to all veneer log volume reported in Doyle scale by veneer mills.

The last report from a detailed study of all industrial roundwood output in Michigan was published in 1988. Most comparisons in this report are with the 1988 study results. Quantities shown may vary slightly from one table to another because of rounding differences, but these differences are insignificant.

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Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1990

Ronald L. Hackett and John Pilon

HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

- Industrial roundwood production declined from 355.2 million cubic feet in 1988 to 347.3 million cubic feet in 1990. Annual production decreased an average of 8 percent for softwoods and less than 1 percent for hardwoods.

- Pulpwood accounted for 62 percent of the industrial roundwood harvest in 1990 compared to 59 percent in 1988.

- Industrial fuelwood production declined 32 percent from 21.9 million cubic feet in 1988 to 14.8 million cubic feet in 1990.

- Three species (aspen, hard maple, and soft maple) supplied 53 percent of the growing stock harvested.

- Log and bolt receipts at active mills (excluding fuelwood and receipts at treating mills) were 328.9 million cubic feet, up 6 percent from 1988. Hardwoods accounted for most of the increase.

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John Pilon, Forest Products Specialist, received a B.S. in forestry from Michigan Technological University in 1976. He joined the Michigan Department of Natural Resources in 1978 and has been working in the DNR Forest Development Section since 1986.

In terms of volume of wood used, pulp mills dominate Michigan forest industry; but sawmills far outnumber any other mill category. The total number of mills of all types operating in Michigan hit its lowest point in 1975 at 293 mills, but then recovered to 355 active mills by 1990. Although primary wood-using mills are scattered throughout the State, major mills are concentrated in the northern two-thirds of Michigan. The State is divided into four Forest Survey Units (fig. 1).

PULPWOOD

- Michigan's timberland produced 2.98 million cords of pulpwood (including residues) in 1990. This volume was 2 percent higher than the 1988 production of 2.92 million cords. In 1989 the volume of pulpwood harvested was a record high 3.11 million cords, based on the North Central Station's annual study of pulpwood production.

- Aspen was 37 percent of the volume cut for pulpwood in 1990. Aspen demand continues to be high, while birch and other hardwoods continue to gain in use for woodpulp.

- More than 90 percent of Michigan's pulpwood needs were met from within the State. White birch, hard maple, and aspen were the principal imports—mainly from Wisconsin. Receipts for mills in Michigan were strong in aspen, hard maple, white birch, and hardwood residues.

- Eighty-eight percent of Michigan's pulpwood harvested in 1990 remained in the State. Ninety-three percent of the pulpwood exported went to Wisconsin. Principal exports were aspen, jack pine, spruce, and hard maple.

Figure 1.—*Forest Survey Units in Michigan.*

- Although aspen pulpwood production has remained strong over the last 30 years, other species have also continued to rise to new highs (fig. 2).

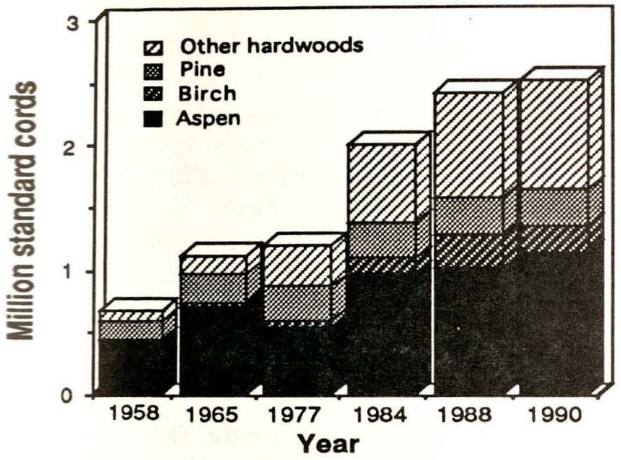

Figure 2.— *Pulpwood production in Michigan for selected years.*

SAW LOGS

- Loggers delivered nearly 625 million board feet of Michigan saw logs to mills in 1990, down 4 percent (29 million board feet) from 1988. Most of the decline (30 million board feet) was in hardwoods. Ash had the largest decrease with 12 million board feet.

- Major saw-log species harvested in 1990 were hard maple, red oak, aspen, red pine, and soft maple. Softwood saw-log production increased 1 percent, while hardwood saw-log production decreased 5.8 percent from 1988 to 1990.

- Seven percent of the saw-log volume—primarily aspen, hard maple, and red oak—was shipped to Wisconsin, Indiana, and other States outside the region.

- Major production gains since 1988 were in hard maple (6 million board feet), white pine (3 million board feet), and basswood (2 million board feet). Major declines since 1988 were in ash and yellow birch (fig. 3).

- Leading saw-log producing counties (more than 20 million board feet each) were Marquette, Iron, Houghton, Newaygo, and Baraga. Nineteen other counties each cut more than 10 million board feet.

- In 1990, 300 active sawmills in Michigan received 625 million board feet of saw logs. In 1988, 325 sawmills received 629 million board feet.

- Michigan imported a total of 8 million board feet of saw logs from Wisconsin, Ohio, Indiana, and Minnesota. Major imported species were red oak, basswood, and hard maple.

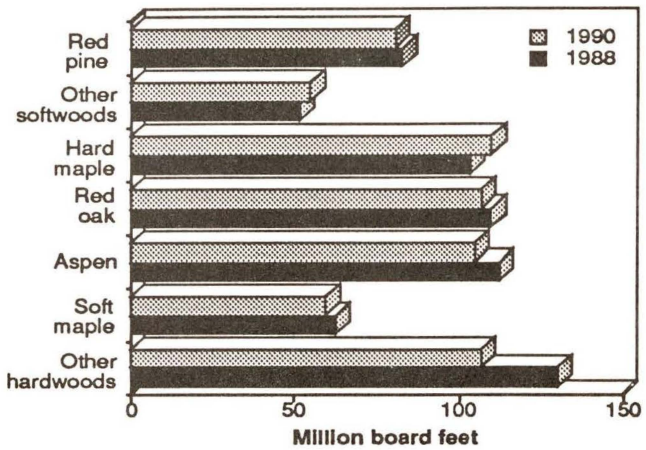

Figure 3.— *Saw-log production in Michigan by species group, 1988 and 1990.*

VENEER LOGS

- Loggers cut 38 million board feet of Michigan veneer logs, up 4 percent from 1988. Of the veneer log and bolt volume, 58 percent remained in Michigan and 42 percent was shipped to Wisconsin, Ohio, Indiana, Iowa, other States, and Canada.

- Hard maple was the primary species cut for veneer logs and bolts in Michigan in 1990, followed by aspen, red oak, and spruce. Hard maple and red oak were the main exports from Michigan to Wisconsin and other States.

OTHER PRODUCTS

- In 1990, 19.4 million cubic feet of other industrial roundwood products was cut in Michigan. These products include industrial fuelwood, commercial posts, cabin logs, shingle bolts, and shaving bolts.

- Industrial fuelwood accounted for 76 percent (221 thousand cords) of these products. Twenty percent of the fuelwood was softwoods.

- Commercial posts (2.5 million) constituted another 13 percent of the other products; cedar was the leading post species. Sixty-two percent of the posts were cut in the Eastern Upper Peninsula.

Residential fuelwood is a major nonindustrial product in Michigan. The results of a 1991 residential fuelwood study will be available in a separate Station publication.

TIMBER REMOVALS

- In the production of Michigan's industrial roundwood harvest, 324.5 million cubic feet of growing stock was removed from timberlands, a 1-percent drop since 1988.

- Total amount of material harvested from timberland for industrial roundwood (exclusive of residential fuelwood) was 428 million cubic feet. Nineteen percent was left in the woods as logging residues (fig. 4). Residue material includes tops, limbs, cull material, and growing-stock material not used for product.

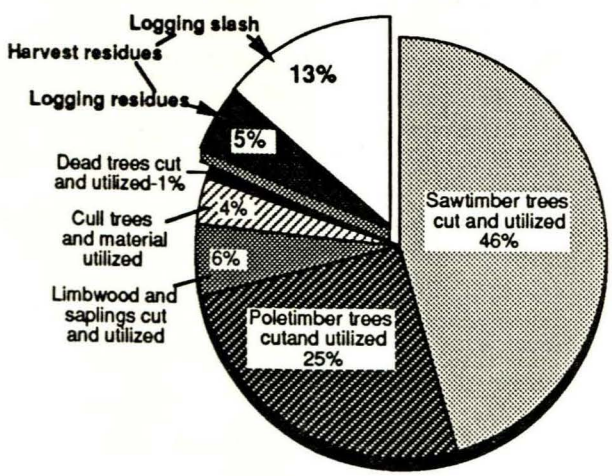

Figure 4.— *Distribution of trees and tree material harvested from timberland for industrial roundwood in Michigan, 1990.*

- Major species harvested from both growing stock and sawtimber were aspen, hard maple, red oak, soft maple, and red pine.

HARVEST RESIDUE

- During 1990, loggers in Michigan generated an estimated 80.9 million cubic feet of logging residues (not including residues from trees cut on nonforest land). Harvest residue consists of all wood fiber left behind from trees cut or killed during logging operations on timberland and not subsequently used for industrial products.

- Aspen and hard maple accounted for 44 percent of all logging residues in 1990.

- Three counties—Marquette, Delta, and Iron—each produced more than 5 million cubic feet of logging residue. All counties except Keweenaw in the Upper Peninsula had more than 1 million cubic feet of residues.

PRIMARY MILL RESIDUE

- Ninety-six percent or more of each mill residue class (coarse, fine, and bark) generated in Michigan primary mills was used.

- During 1990, Michigan primary wood-using mills (except the pulp, particleboard, and waferboard mills) generated 807 thousand green tons of coarse residue, 503 thousand green tons of fine residue, and 359 thousand green tons of bark.

- Pulpwood mills consumed 59 percent of the coarse mill residue for fiber products, and industry and households consumed 33 percent for fuel.

- Fine mill residue and bark were used primarily for industrial fuel, soil conditioner, mulch, livestock bedding, and poultry litter.

APPENDIX

STUDY METHODS

Data for this publication came from responses to a mail questionnaire sent to all known primary mills that use logs and bolts from Michigan. For this study, all major consumers of industrial fuelwood were canvassed with the same questionnaire. The study was a cooperative effort of the Michigan Department of Natural Resources (MDNR) and the North Central Forest Experiment Station (NCFES). All canvassing in Michigan was done by the MDNR using mail and personal contacts; followup of nonrespondents was by mail, telephone, and personal contacts. MDNR utilization and marketing specialists provided estimates based on prior knowledge and contacts for a few Michigan mills that did not furnish complete data.

The NCFES mailed a questionnaire to all out-of-State mills that use Michigan roundwood. Followup of nonrespondents was by mail and telephone.

Logging utilization factors were used to estimate the logging residue. These factors were determined from earlier Michigan logging studies by the NCFES.

The NCFES edited and compiled the data.

Form Approved
OMB No. 0596-0010

LOGS AND OTHER WOOD PROCESSED IN 1990

MICHIGAN

This form is for reporting the quantities and kinds of logs and other wood processed by this plant in 1990, and the disposition of the wood residues resulting from this operation.

All replies will be held confidential and used only for statistical reports.

☐ Check here if you wish to receive a copy of the report resulting from this study.

Plant or company name: _____

Mailing address: _____

Plant location: _____

Person to contact about this report: _____

Types of wood processed in 1990. *Check only one kind of product. If more than one kind was received, fill out a separate form for each.*

14-15

01	☐	Saw logs & bolts--includes veneer logs sawn
02	☐	Veneer logs & bolts cut into veneer
03	☐	Cooperage logs and bolts
06	☐	Piling
07	☐	Poles
09	☐	Industrial fuelwood
10	☐	Posts
11	☐	Charcoal wood
12	☐	Other (specify) _____

☐ Check here if no wood was processed in 1990 and return the form.

Total volume of above-checked product that was processed in 1988.

Conifer (pine, cedar, etc.) _____ (27-36) Hardwood (includes cottonwood) _____ (37-46)

DO NOT WRITE IN THIS BLOCK

Cols. 1-5 = 61100

MILL	STATE	COUNTY	FACTOR	
XXX	XX	XXX	XXX	
6-8	9-10	11-13	47-49	50

A self-addressed envelope is provided for your convenience.

This survey is authorized by PL 93-378 as amended by PL 94-588. Your cooperation is appreciated and needed to make the results of this survey comprehensive, accurate, and timely, although you are not required to respond.

Do not include logs or bolts sold or transferred to other companies. Enter quantity processed opposite species in appropriate columns showing survey units, other states and Canada where the logs and bolts were harvested. The State map on page 4 shows unit boundaries. If the unit of measure is board feet, indicate the log rule or lumber tally. ☐ Doyle ☐ International ☐ Scribner ☐ Lumber tally

If cords, specify size _____. If weight, specify pounds per thousand board feet _____ or pounds per cord _____.

Cols. 1-5 = 612xx or 613xx

Species		Unit of measure: Board feet ☐ Cords ☐ Cubic feet ☐ Lineal feet ☐ Pieces ☐ Weight ☐ Other ☐ _____	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Cedar	1											
Balsam fir	2											
Hemlock	3											
Jack pine	4											
Red pine	5											
White pine	6											
Spruce	7											
Tamarack	8											
Ash	9											
Aspen	10											
Balsam poplar	11											
Basswood	12											
Beech	13											
White birch	14											
Yellow birch	15											
Cottonwood	16											
Elm	17											
Hickory	18											
Hard maple	19											
Soft maple	20											
Red oak	21											
White oak	22											
Walnut	23											
Other (specify)	24											
TOTAL												

DISPOSAL OF PLANT RESIDUES IN 1990 BY TYPE AND USE, for product checked on page 1

Instructions: Please enter your best estimate of the **percentage of each type of plant residue** that was used for the various purposes indicated

Cols. 1-5 = 615xx

DISPOSAL OF RESIDUE	BARK		COARSE RESIDUES (Suitable for chipping such as slabs, edgings, etc.)		FINE RESIDUES (Sawdust, veneer, clippings, etc. not suitable for chipping)	
	1 Conifer	2 Hardwood	3 Conifer	4 Hardwood	5 Conifer	6 Hardwood
	XX	XX	XX	XX	XX	XX
1. USED FOR:						
a. Manufacture of fiber products such as pulp, hardboard, or roofing felt 1	%	%	%	%	%	%
b. Charcoal or chemical wood 2	%	%	%	%	%	%
c. Industrial fuel at this or other mill 3	%	%	%	%	%	%
d. Domestic household fuel -- sold or given away 4	%	%	%	%	%	%
e. Miscellaneous uses such as livestock bedding, mulch, small dimension, and specialty items. 5	%	%	%	%	%	%
2. NOT USED: (Including land fill and residues burned as waste. 6	%	%	%	%	%	%
3. TOTAL	%	%	%	%	%	%

DEFINITION OF TERMS

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edging, and veneer cores.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest Survey Unit.—A geographic area (group of counties) used by the Forest Inventory and Analysis Project to report periodic inventories and use of forest resources.

Harvest residues.—The total unused wood material left after harvesting.

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production.—The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood receipts.—The quantity of industrial roundwood received by commercial mills.

Logging residue.—The unused portions of the merchantable section of growing-stock trees cut or killed by logging.

Logging slash.—The unused portion of an unmerchantable section of tree cut or killed by logging.

Particleboard.—A generic term for a panel manufactured from lignocellulosic materials—commonly wood—essentially in the form of particles produced by compressing and bonding small particles of wood. Includes panels made from shavings, flakes, wafers, chips, sawdust, strands, slivers, or wood wool.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Standard cord.—A stack of wood bolts (or the equivalent) encompassing 128 cubic feet of wood, bark, and air space. A cord of pulpwood in the North Central Region is assumed to contain 79 cubic feet of wood and 49 cubic feet of bark and air space. Most industries in Minnesota report cordwood volume in 100-inch cords or Lake States cords. These data are converted to 96-inch standard cord equivalents for this report.

Timberland.—Forest land producing, or capable of producing, crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Generally, this includes areas suitable for growing crops of industrial wood in excess of 20 cubic feet per acre annually.

Veneer log.—A log considered suitable in size and quality for producing veneer-sliced or rotary-cut.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS
Eastern white pine ..... *Pinus strobus*
Red pine ..... *Pinus resinosa*
Jack pine ..... *Pinus banksiana*
Spruce
White spruce ..... *Picea glauca*
Black spruce ..... *Picea mariana*
Balsam fir ..... *Abies balsamea*
Eastern hemlock ..... *Tsuga canadensis*
Tamarack ..... *Larix laricina*
Northern white-cedar ..... *Thuja occidentalis*
HARDWOODS
White oak
White oak ..... *Quercus alba*
Bur oak ..... *Quercus macrocarpa*
Chinkapin oak ..... *Quercus muehlenbergii*
Swamp white oak ..... *Quercus bicolor*
Red oak
Northern red oak ..... *Quercus rubra*
Black oak ..... *Quercus velutina*
Pin oak ..... *Quercus palustris*
Hickory
Bitternut hickory ..... *Carya cordiformis*
Pignut hickory ..... *Carya glabra*
Shagbark hickory ..... *Carya ovata*
White birch ..... *Betula papyrifera*
Yellow birch ..... *Betula alleghaniensis*
Hard maple
Black maple ..... *Acer nigrum*
Sugar maple ..... *Acer saccharum*
Soft maple
Red maple ..... *Acer rubrum*
Silver maple ..... *Acer saccharinum*
American beech ..... *Fagus grandifolia*
Ash
Black ash ..... *Fraxinus nigra*
White ash ..... *Fraxinus americana*
Balsam poplar ..... *Populus balsamifera*
Aspen
Bigtooth aspen ..... *Populus grandidentata*
Quaking aspen ..... *Populus tremuloides*
Eastern cottonwood ..... *Populus deltoides*
American basswood ..... *Tilia americana*
Black walnut ..... *Juglans nigra*
Elm
American elm ..... *Ulmus americana*
Rock elm ..... *Ulmus thomasii*
Slippery elm ..... *Ulmus rubra*
Other hardwoods
Sycamore ..... *Platinus occidentalis*
Black cherry ..... *Prunus serotina*
River birch ..... *Betula nigra*
Black locust ..... *Robinia pseudoacacia*
Honeylocust ..... *Gleditsia triacanthos*
Red mullberry ..... *Morus rubra*
Butternut ..... *Juglans cinerea*
Black willow ..... *Salix nigra*
Boxelder ..... *Acer negundo*
Hackberry ..... *Celtis occidentalis*

TABLE TITLES

Table 1.—Number of active primary wood-using mills in Michigan, 1977, 1984, 1988, and 1990

Table 2.—Industrial roundwood receipts by type of mill in Michigan, 1977, 1984, 1988, and 1990

Table 3.—Industrial roundwood production by Forest Survey Unit, species group, and type of product, Michigan, 1990

Table 4.—Material harvested on timberland for industrial roundwood by source of material and species group, Michigan, 1990

Table 5.—Michigan pulpwood production by species group, 1946-1990

Table 6.—Michigan pulpwood production by species group and destination, 1990

Table 7.—Pulpwood production from roundwood by species group, Forest Survey Unit, and county, Michigan, 1990

Table 8.—Pulpwood receipts in Michigan by species group, 1946-1990

Table 9.—Pulpwood receipts in Michigan by area of origin, 1946-1990

Table 10.—Pulpwood receipts in Michigan by species group and area of origin, 1990

Table 11.—Saw-log production and receipts in Michigan by species group, 1988 and 1990

Table 12.—Saw-log production by Forest Survey Unit, species group, and State of destination, Michigan, 1990

Table 13.—Saw-log production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

Table 14.—Saw-log receipts in Michigan by Forest Survey Unit, species group, and State of origin, 1990

Table 15.—Veneer log production and receipts in Michigan for selected years, 1946-1990

Table 16.—Veneer log production and receipts by species group in Michigan, 1988 and 1990

Table 17.—Veneer log and bolt production in Michigan by species group and destination, 1990

Table 18.—Veneer log receipts in Michigan by area of origin for selected years, 1946-1990

Table 19.—Veneer log and bolt receipts in Michigan by species group and State of origin, 1990

Table 20.—Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

Table 21.—Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

Table 22.—Harvest residues generated by industrial roundwood harvesting from timberland by Forest Survey Unit, county, and species group, Michigan, 1990

Table 23.—Residue produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Michigan, 1990

Table 1.--Number of active primary wood-using mills in Michigan 1977, 1984, 1988, and 1990

Kind of mill	1977	1984	1988	1990
Sawmills 1/				
Large 2/	20	26	31	26
Medium 3/	86	94	117	103
Small 4/	196	176	136	171
Total	302	296	284	300
Pulp mills 5/	8	9	12	12
Veneer mills	9	8	8	8
Other mills	19	26	32	35
Total	338	339	336	355

1/ Mills persistently sawing 50 mbf or more annually.

2/ Annual lumber production in excess of 5 million board feet.

3/ Annual lumber production from 1 million to 5 million board feet.

4/ Annual lumber production from 50 thousand to 1 million board feet.

5/ Includes flakeboard plants after 1977, formerly reported in "other mills" category.

Table 2.--Industrial roundwood receipts by type of mill, in Michigan 1977, 1984, 1988, and 1990

(In million cubic feet)

Kind of mill	1977	1984	1988	1990
All species				
Pulp mills 1/	82.4	143.2	205.7	214.4
Sawmills	78.7	83.2	98.3	107.4
Other mills 2/	15.0	4.2	6.4	7.1
Total	176.1	230.6	310.4	328.9
Softwoods				
Pulp mills 1/	28.2	30.4	36.9	41.2
Sawmills	10.5	10.3	18.5	23.3
Other mills 2/	3.4	2.3	0.1	0.7
Total	42.1	43.0	55.5	65.2
Hardwoods				
Pulp mills 1/	54.2	112.8	168.8	173.2
Sawmills	68.2	72.9	79.8	84.1
Other mills 2/	11.6	1.9	6.3	6.4
Total	134.0	187.6	254.9	263.7

1/ Includes flakeboard plants after 1977, formerly reported in "other mills" category.

2/ Does not include treating plants or fuelwood receipts.

Table 3.--Industrial roundwood production by Forest Survey Unit, species group and type of product, Michigan, 1990 1/

ALL UNITS

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 2/	*MCF 3/*	*MBF2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*Cords4/*	*MCF3/*	*Pieces*	*MCF 3/*	*Thou. pieces*	*MCF3/*	*MCF 3/*	*MCF 3/*
SOFTWOODS														
Cedar	12,223	2,294	--	--	6,440	503	--	--	88,640	489	2,429	2,492	16	5,794
Balsam fir	1,675	312	--	--	86,324	6,813	3,325	225	167	1	10	10	--	7,361
Hemlock	2,655	439	--	--	55,971	4,420	--	--	--	--	--	--	--	4,859
Jack pine	9,978	1,874	--	--	227,145	17,953	24,476	1,639	--	--	--	--	--	21,466
Red pine	80,660	13,527	445	72	62,754	4,947	9,643	645	64,407	376	80	83	--	19,650
White pine	24,379	4,084	1,755	281	9,736	766	2,678	180	17,471	99	--	--	--	5,410
Spruce	3,763	701	2,077	339	66,034	5,211	2,454	166	167	1	--	--	--	6,418
Tamarack	214	37	213	33	8,132	636	--	--	--	--	--	--	--	706
Total	135,547	23,268	4,490	725	522,536	41,249	42,576	2,855	170,852	966	2,519	2,585	16	71,664
HARDWOODS														
Ash	14,804	2,573	831	123	27,810	2,183	4,738	318	--	--	--	--	52	5,249
Aspen	104,591	18,387	4,885	795	1,115,053	88,096	62,701	4,213	--	--	--	--	536	112,027
Balsam poplar	904	157	--	--	60,486	4,777	--	--	--	--	--	--	--	4,934
Basswood	24,282	4,238	1,334	212	44,365	3,493	8,067	541	--	--	--	--	--	8,484
Beech	17,545	2,945	283	47	31,491	2,474	1,514	101	--	--	--	--	--	5,567
White birch	9,215	1,605	1,262	207	172,918	13,649	9,923	667	--	--	--	--	286	16,414
Yellow birch	7,974	1,335	1,869	302	55,288	4,360	138	10	--	--	--	--	--	6,007
Cottonwood	2,752	475	60	8	104	9	--	--	--	--	--	--	--	492
Elm	1,107	183	44	5	18,945	1,492	--	--	--	--	--	--	--	1,680
Hickory	2,234	364	59	3	--	--	--	--	--	--	--	--	--	367
Hard maple	110,337	17,888	16,959	2,747	266,141	21,017	17,738	1,191	--	--	--	--	104	42,947
Soft maple	60,038	10,533	1,041	166	233,672	18,454	35,799	2,404	--	--	--	--	52	31,609
Red oak	107,011	18,772	3,580	568	99,227	7,835	34,364	2,309	--	--	--	--	--	29,484
White oak	19,288	3,369	690	102	43,676	3,439	1,125	75	--	--	--	--	--	6,985
Walnut	1,216	199	111	16	--	--	--	--	--	--	--	--	--	215
Other hardwoods	5,992	1,039	338	42	25,140	1,963	2,277	151	--	--	--	--	--	3,195
Total	489,290	84,062	33,346	5,343	2,194,316	173,241	178,384	11,980	--	--	--	--	1,030	275,656
All species	624,837	107,330	37,836	6,068	2,716,852	214,490	220,960	14,835	170,852	966	2,519	2,585	1,046	347,320

(Table 3 continued on next page)

(Table 3 continued)

EASTERN UPPER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 2/	*MCF 3/*	*MBF2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*Cords4/*	*MCF3/*	*Pieces*	*MCF 3/*	*Thou. pieces*	*MCF3/*	*MCF 3/*	*MCF 3/*
SOFTWOODS														
Cedar	7,741	1,457	--	--	4,010	315	--	--	81,690	450	1,456	1,496	--	3,718
Balsam fir	947	178	--	--	51,318	4,055	--	--	--	--	10	10	--	4,243
Hemlock	404	68	--	--	30,699	2,425	--	--	--	--	--	--	--	2,493
Jack pine	43	8	--	--	72,826	5,756	--	--	--	--	--	--	--	5,764
Red pine	7,260	1,219	--	--	20,322	1,605	--	--	30,499	182	80	83	--	3,089
White pine	6,437	1,081	130	19	5,827	462	--	--	2,295	12	--	--	--	1,574
Spruce	1,813	341	--	--	28,660	2,264	--	--	--	--	--	--	--	2,605
Tamarack	2	--	--	--	5,052	398	--	--	--	--	--	--	--	398
Total	24,647	4,352	130	19	218,714	17,280	--	--	114,484	644	1,546	1,589	--	23,884
HARDWOODS														
Ash	426	70	39	5	3,913	308	--	--	--	--	--	--	52	435
Aspen	15,241	2,684	59	9	220,108	17,392	--	--	--	--	--	--	236	20,321
Balsam poplar	419	73	--	--	39,533	3,122	--	--	--	--	--	--	--	3,195
Basswood	1,298	225	98	15	11,155	877	--	--	--	--	--	--	--	1,117
Beech	11,648	1,962	246	40	14,039	1,108	270	18	--	--	--	--	--	3,128
White birch	2,072	365	722	119	62,701	4,955	42	3	--	--	--	--	286	5,728
Yellow birch	1,016	169	278	46	19,338	1,527	138	10	--	--	--	--	--	1,752
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Elm	19	3	--	--	9,665	762	--	--	--	--	--	--	--	765
Hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	14,201	2,305	3,306	538	80,149	6,333	705	48	--	--	--	--	104	9,328
Soft maple	6,544	1,148	222	36	56,252	4,444	481	32	--	--	--	--	52	5,712
Red oak	676	116	62	9	6,985	555	--	--	--	--	--	--	--	680
White oak	77	12	23	3	91	6	--	--	--	--	--	--	--	21
Walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	253	44	27	2	4,243	332	79	5	--	--	--	--	--	383
Total	53,890	9,176	5,082	822	528,172	41,721	1,715	116	--	--	--	--	730	52,565
All species	78,537	13,528	5,212	841	746,886	59,001	1,715	116	114,484	644	1,546	1,589	730	76,449

(Table 3 continued on next page)

(Table 3 continued)

WESTERN UPPER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 2/	*MCF 3/*	*MBF2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*Cords4/*	*MCF3/*	*Pieces*	*MCF 3/*	*Thou. pieces*	*MCF3/*	*MCF 3/*	*MCF 3/*
SOFTWOODS														
Cedar	1,173	219	--	--	2,138	166	--	--	1,660	10	509	522	16	933
Balsam fir	149	25	--	--	32,996	2,602	--	--	--	--	--	--	--	2,627
Hemlock	2,105	349	--	--	23,632	1,868	--	--	--	--	--	--	--	2,217
Jack pine	2,762	520	--	--	64,799	5,122	7,032	473	--	--	--	--	--	6,115
Red pine	12,239	2,050	445	72	18,942	1,497	--	--	3,956	23	--	--	--	3,642
White pine	10,783	1,807	1,625	262	3,689	288	--	--	1,121	6	--	--	--	2,363
Spruce	1,444	268	2,077	339	35,900	2,832	--	--	--	--	--	--	--	3,439
Tamarack	212	37	213	33	3,080	238	--	--	--	--	--	--	--	308
Total	30,867	5,275	4,360	706	185,176	14,613	7,032	473	6,737	39	509	522	16	21,644
HARDWOODS														
Ash	1,498	261	223	35	14,636	1,158	--	--	--	--	--	--	--	1,454
Aspen	17,805	3,131	4,654	757	368,793	29,132	--	--	--	--	--	--	--	33,020
Balsam poplar	385	67	0	0	16,801	1,328	--	--	--	--	--	--	--	1,395
Basswood	9,172	1,611	1,172	191	22,765	1,800	--	--	--	--	--	--	--	3,602
Beech	194	33	32	6	9,601	757	--	--	--	--	--	--	--	796
White birch	3,343	584	540	88	68,436	5,408	--	--	--	--	--	--	--	6,080
Yellow birch	6,761	1,139	1,591	256	34,506	2,725	--	--	--	--	--	--	--	4,120
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Elm	301	51	--	--	9,280	730	--	--	--	--	--	--	--	781
Hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	63,562	10,311	12,472	2,028	156,433	12,357	--	--	--	--	--	--	--	24,696
Soft maple	17,581	3,086	606	98	74,249	5,865	--	--	--	--	--	--	--	9,049
Red oak	5,802	1,018	1,746	283	17,211	1,361	--	--	--	--	--	--	--	2,662
White oak	25	4	51	8	298	21	--	--	--	--	--	--	--	33
Walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	340	58	63	8	11,339	892	--	--	--	--	--	--	--	958
Total	126,769	21,354	23,150	3,758	804,348	63,534	--	--	--	--	--	--	--	88,646
All species	157,636	26,629	27,510	4,464	989,524	78,147	7,032	473	6,737	39	509	522	16	110,290

(Table 3 continued on next page)

(Table 3 continued)

NORTHERN LOWER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 2/	*MCF 3/*	*MBF2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*Cords4/*	*MCF3/*	*Pieces*	*MCF 3/*	*Thou. pieces*	*MCF3/*	*MCF 3/*	*MCF 3/*
SOFTWOODS														
Cedar	3,307	618	--	--	292	22	--	--	5,290	29	464	474	--	1,143
Balsam fir	579	109	--	--	2,010	156	3,325	225	167	1	--	--	--	491
Hemlock	146	22	--	--	1,640	127	--	--	--	--	--	--	--	149
Jack pine	7,172	1,346	--	--	89,520	7,075	17,444	1,166	--	--	--	--	--	9,587
Red pine	57,515	9,651	--	--	23,381	1,837	9,643	645	26,883	152	--	--	--	12,285
White pine	6,929	1,161	--	--	220	16	2,678	180	12,545	73	--	--	--	1,430
Spruce	504	92	--	--	1,474	115	2,454	166	167	1	--	--	--	374
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	76,152	12,999	--	--	118,537	9,348	35,544	2,382	45,052	256	464	474	--	25,459
HARDWOODS														
Ash	5,883	1,026	339	53	8,973	695	4,738	318	--	--	--	--	--	2,092
Aspen	67,442	11,856	157	27	514,522	40,654	62,701	4,213	--	--	--	--	300	57,050
Balsam poplar	--	--	--	--	4,152	327	--	--	--	--	--	--	--	327
Basswood	11,439	1,998	50	4	10,445	816	8,067	541	--	--	--	--	--	3,359
Beech	4,383	738	--	--	7,633	592	1,244	83	--	--	--	--	--	1,413
White birch	3,673	634	--	--	41,748	3,285	9,881	664	--	--	--	--	--	4,583
Yellow birch	178	26	--	--	1,424	108	--	--	--	--	--	--	--	134
Cottonwood	436	74	--	--	104	9	--	--	--	--	--	--	--	83
Elm	209	33	2	--	--	--	--	--	--	--	--	--	--	33
Hickory	64	9	1	--	--	--	--	--	--	--	--	--	--	9
Hard maple	27,978	4,533	584	91	29,463	2,321	17,033	1,143	--	--	--	--	--	8,088
Soft maple	23,479	4,122	174	27	96,298	7,599	35,318	2,372	--	--	--	--	--	14,120
Red oak	66,174	11,613	797	123	62,148	4,901	34,364	2,309	--	--	--	--	--	18,946
White oak	8,217	1,434	111	16	30,509	2,405	1,125	75	--	--	--	--	--	3,930
Walnut	7	--	8	1	--	--	--	--	--	--	--	--	--	1
Other hardwoods	1,432	247	137	20	8,552	663	2,198	146	--	--	--	--	--	1,076
Total	220,994	38,343	2,360	362	815,971	64,375	176,669	11,864	--	--	--	--	300	115,244
All species	297,146	51,342	2,360	362	934,508	73,723	212,213	14,246	45,052	256	464	474	300	140,703

(Table 3 continued on next page)

(Table 3 continued)

SOUTHERN LOWER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 2/	*MCF 3/*	*MBF2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*Cords4/*	*MCF3/*	*Pieces*	*MCF 3/*	*Thou. pieces*	*MCF3/*	*MCF 3/*	*MCF 3/*
SOFTWOODS														
Cedar	2	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jack pine	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	3,646	607	--	--	109	8	--	--	3,069	19	--	--	--	634
White pine	230	35	--	--	--	--	--	--	1,510	8	--	--	--	43
Spruce	2	--	--	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	3,881	642	--	--	109	8	--	--	4,579	27	--	--	--	677
HARDWOODS														
Ash	6,997	1,216	230	30	288	22	--	--	--	--	--	--	--	1,268
Aspen	4,103	716	15	2	11,630	918	--	--	--	--	--	--	--	1,636
Balsam poplar	100	17	--	--	--	--	--	--	--	--	--	--	--	17
Basswood	2,373	404	14	2	--	--	--	--	--	--	--	--	--	406
Beech	1,320	212	5	1	218	17	--	--	--	--	--	--	--	230
White birch	127	22	--	--	33	1	--	--	--	--	--	--	--	23
Yellow birch	19	1	--	--	20	--	--	--	--	--	--	--	--	1
Cottonwood	2,316	401	60	8	--	--	--	--	--	--	--	--	--	409
Elm	578	96	42	5	--	--	--	--	--	--	--	--	--	101
Hickory	2,170	355	58	3	--	--	--	--	--	--	--	--	--	358
Hard maple	4,596	739	597	90	96	6	--	--	--	--	--	--	--	835
Soft maple	12,434	2,177	39	5	6,873	546	--	--	--	--	--	--	--	2,728
Red oak	34,359	6,025	975	153	12,883	1,018	--	--	--	--	--	--	--	7,196
White oak	10,969	1,919	505	75	12,778	1,007	--	--	--	--	--	--	--	3,001
Walnut	1,209	199	103	15	--	--	--	--	--	--	--	--	--	214
Other hardwoods	3,967	690	111	12	1,006	76	--	--	--	--	--	--	--	778
Total	87,637	15,189	2,754	401	45,825	3,611	--	--	--	--	--	--	--	19,201
All species	91,518	15,831	2,754	401	45,934	3,619	--	--	4,579	27	--	--	--	19,878

1/ Based on factors obtained from the Michigan Utilization Study, 1980.

2/ Thousand board feet, International 1/4-inch rule.

3/ Thousand cubic feet.

4/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

Table 4.-- Material harvested on timberland for industrial roundwood by source of material and species group, Michigan, 1990 1/

(In thousand cubic feet)

Species group	Growing stock				Nongrowing stock						Total material used for products	Total material not used	Total material harvested
	Used for products				Used for products								
	Saw-timber	Pole-timber	Residue	TOTAL	Limb-wood	Sap-lings	Cull trees	Dead trees	Not used	TOTAL			
SOFTWOODS													
Cedar	3,251	2,130	595	5,976	153	130	81	49	982	1,395	5,794	1,577	7,371
Balsam fir	5,094	1,795	310	7,199	331	74	31	36	1,750	2,222	7,361	2,060	9,421
Hemlock	2,703	1,443	156	4,302	250	106	231	126	1,444	2,157	4,859	1,600	6,459
Jack pine	11,959	5,991	578	18,528	2,301	254	220	741	4,061	7,577	21,466	4,639	26,105
Red pine	16,100	2,099	786	18,985	768	121	304	258	5,480	6,931	19,650	6,266	25,916
White pine	4,705	366	247	5,318	191	18	76	54	1,485	1,824	5,410	1,732	7,142
Spruce	4,640	1,397	345	6,382	237	57	55	32	1,614	1,995	6,418	1,959	8,377
Tamarack	516	164	38	718	18	6	2	--	182	208	706	220	926
Total	48,968	15,385	3,055	67,408	4,249	766	1,000	1,296	16,998	24,309	71,664	20,053	91,717
HARDWOODS													
Ash	3,303	1,380	522	5,205	350	24	154	26	654	1,208	5,237	1,176	6,413
Aspen	51,602	51,140	4,758	107,500	5,128	178	3,243	735	16,705	25,989	112,026	21,463	133,489
Balsam poplar	1,758	2,373	307	4,438	374	14	344	71	716	1,519	4,934	1,023	5,957
Basswood	5,354	2,174	840	8,368	580	41	274	50	1,078	2,023	8,473	1,918	10,391
Beech	3,846	650	479	4,975	349	7	712	1	1,314	2,383	5,565	1,793	7,358
White birch	6,412	7,321	1,094	14,827	1,410	101	969	201	2,069	4,750	16,414	3,163	19,577
Yellow birch	3,327	934	439	4,700	469	9	1,266	2	1,755	3,501	6,007	2,194	8,201
Cottonwood	465	18	72	555	4	--	3	--	66	73	490	138	628
Elm	672	756	112	1,540	118	6	103	23	232	482	1,678	344	2,022
Hickory	357	3	42	402	3	--	3	--	67	73	366	109	475
Hard maple	27,908	5,921	3,969	37,798	3,109	118	5,851	38	10,470	19,586	42,945	14,439	57,384
Soft maple	16,037	10,990	2,486	29,513	2,753	245	1,298	274	3,649	8,219	31,597	6,135	37,732
Red oak	19,090	6,426	2,033	27,549	2,370	163	846	523	3,107	7,009	29,418	5,140	34,558
White oak	3,670	2,354	384	6,408	529	88	181	128	643	1,569	6,950	1,027	7,977
Walnut	204	3	23	230	3	--	4	--	37	44	214	60	274
Other hardwoods	1,716	1,081	273	3,070	223	5	144	26	422	820	3,195	695	3,890
Total	145,721	93,524	17,833	257,078	17,772	999	15,395	2,098	42,984	79,248	275,509	60,817	336,326
All species	194,689	108,909	20,888	324,486	22,021	1,765	16,395	3,394	59,982	103,557	347,173	80,870	428,043

1/ Based on factors obtained from the Michigan Utilization Study, 1980.

Table 5.--Michigan pulpwood production by species group, 1946-1990

(In thousand standard cords, unpeeled) 1/

Year	Roundwood									Residue	
	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	845	85	117	250	127	3	246	9	8	--	--
1947	679	86	139	149	134	2	153	6	10	--	--
1948	728	89	163	132	133	2	182	7	19	--	1
1949	519	38	124	62	97	2/	168	5	25	--	--
1950	657	66	123	84	99	2/	251	6	28	--	--
1951	935	103	140	169	110	2/	371	8	34	--	--
1952	762	58	153	125	120	2/	275	8	23	--	--
1953	724	67	102	71	81	2/	365	5	33	--	--
1954	797	43	137	62	119	1	404	5	26	--	--
1955	808	38	122	36	111	2/	459	4	38	--	--
1956	966	67	119	88	115	2/	537	4	36	--	--
1957	980	70	147	61	118	2/	521	7	56	--	--
1958	900	149	115	35	86	1	434	1	79	--	--
1959	1,053	197	109	39	83	3	523	4	90	1	4
1960	1,237	188	135	46	108	5	669	9	75	--	2
1961	1,106	156	115	44	96	4	558	16	96	2	19
1962	1,223	184	104	57	86	4	601	21	144	2	20
1963	1,297	174	121	62	88	3	662	23	131	4	29
1964	1,322	198	85	59	72	3	674	38	146	5	42
1965	1,365	224	74	64	65	2	704	32	149	5	46
1966	1,571	251	88	99	74	1	777	12	194	4	71
1967	1,344	193	90	60	75	1	646	11	200	3	65
1968	1,168	205	62	45	39	2	540	13	172	6	84
1969	1,302	207	44	63	39	2	606	23	196	8	114
1970	1,406	239	67	69	51	3	596	33	196	10	142
1971	1,267	235	53	43	45	2	548	23	196	13	109
1972	1,401	229	60	50	38	7	529	36	309	21	122
1973	1,585	204	68	58	46	5	603	59	365	28	149
1974	1,843	259	74	52	40	7	706	85	424	17	179
1975	1,280	235	74	50	45	5	436	36	217	22	160
1976	1,541	281	75	79	32	6	491	69	320	24	164
1977	1,595	262	94	62	48	10	532	62	333	21	171
1978	1,675	277	87	48	42	8	586	90	390	17	130
1979 3/	1,981	350	85	45	39	10	709	109	456	15	163
1980	1,969	268	109	58	58	13	705	104	501	15	138
1981	1,838	237	104	39	45	17	652	105	473	15	151
1982	1,751	262	105	56	68	22	632	89	396	13	108
1983	2,157	256	101	48	78	31	889	130	451	21	152
1984	2,398	293	78	47	77	24	962	120	607	23	167
1985	2,376	314	93	37	84	53	977	110	545	17	146
1986	2,807	315	96	43	93	56	979	221	812	53	139
1987	2,746	292	98	39	97	68	896	228	799	72	157
1988	2,919	298	118	35	93	36	1,009	259	826	69	176
1989	3,114	254	143	42	115	44	1,104	280	871	79	182
1990	2,982	300	86	56	66	14	1,115	228	851	84	182

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 6.-- Michigan pulpwood production by species group and destination, 1990

(In thousand standard cords, unpeeled) 1/

Class of material and species group	Total	Michigan	Minnesota	Wisconsin	Canada
ROUNDWOOD					
SOFTWOODS					
Cedar	6	6	--	--	--
Balsam fir	86	78	2/	8	--
Hemlock	56	43	--	3	10
Jack pine	227	167	--	60	--
Red pine	62	53	--	9	--
White pine	10	9	--	1	--
Spruce	67	13	1	40	13
Tamarack	8	6	--	2	--
Total	522	375	1	123	23
HARDWOODS					
Ash	28	24	--	4	--
Aspen	1,115	1,011	--	104	--
Balsam poplar	60	60	--	--	--
Basswood	44	43	--	1	--
Beech	32	29	--	3	--
White birch	172	169	--	3	--
Yellow birch	55	49	--	6	--
Cottonwood	--	2/	--	--	--
Elm	19	19	--	2/	--
Hickory	--	--	--	--	--
Hard maple	266	236	--	30	--
Soft maple	233	221	--	12	--
Red oak	99	97	--	2	--
White oak	43	43	--	2/	--
Other hardwoods	25	21	--	4	--
Total	2,191	2,022	--	169	--
Total roundwood	2,713	2,397	1	292	23
RESIDUES 2/					
Softwood	84	75	--	9	--
Hardwood	182	171	--	11	--
Total	266	246	--	20	--
ALL MATERIAL	2,979	2,643	1	312	23

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

Table 7.-- Pulpwood production from roundwood by species group, Forest Survey Unit, and county, Michigan, 1990

(In standard cords)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	344	4,308	4,354	6,991	1,679	506	1,197	837	712	16,569	4,878	2,164	2,074	5,128
Chippewa	428	4,988	4,632	14,281	1,916	585	2,697	374	279	32,792	5,124	888	952	3,698
Delta	1,256	16,077	7,805	23,224	6,840	1,847	11,029	1,344	1,078	66,598	11,473	3,008	4,739	20,298
Luce	293	3,659	2,502	7,548	1,427	431	1,293	300	113	6,603	1,881	345	585	1,483
Mackinac	343	3,967	2,377	3,653	1,462	465	3,207	295	393	31,271	6,381	1,229	1,580	8,706
Menominee	566	8,587	4,414	7,440	3,158	846	6,255	1,103	698	44,875	4,494	1,636	1,886	17,882
Schoolcraft	780	9,732	4,615	9,689	3,840	1,147	2,982	799	640	21,400	5,302	1,885	2,223	5,506
Total	4,010	51,318	30,699	72,826	20,322	5,827	28,660	5,052	3,913	220,108	39,533	11,155	14,039	62,701
WESTERN UPPER PENINSULA														
Baraga	114	1,422	1,874	2,855	617	168	410	117	1,209	19,742	682	1,535	954	5,510
Dickinson	1,025	13,706	6,990	14,149	7,386	1,508	7,135	1,200	530	80,591	4,144	1,506	1,740	3,765
Gogebic	7	2,082	371	3,611	1,879	59	4,730	101	1,723	35,821	125	3,486	667	4,069
Houghton	118	1,556	1,208	1,558	1,118	173	1,358	150	1,785	16,852	1,201	2,313	1,428	7,620
Iron	140	4,767	4,595	6,926	3,870	546	17,172	508	2,107	56,540	877	2,184	1,129	16,635
Keweenaw	--	--	--	--	--	--	14	--	121	1,440	--	91	140	545
Marquette	734	9,258	8,439	33,495	3,638	1,221	4,741	1,004	1,522	83,007	7,616	4,361	3,357	23,028
Ontonagon	--	205	155	2,205	434	14	340	--	5,639	74,800	2,156	7,289	186	7,264
Total	2,138	32,996	23,632	64,799	18,942	3,689	35,900	3,080	14,636	368,793	16,801	22,765	9,601	68,436
NORTHERN LOWER PENINSULA														
Alcona	--	--	--	5,450	90	--	--	--	395	35,502	1,287	76	56	2,995
Alpena	--	--	--	177	94	--	--	--	179	18,622	591	32	25	1,338
Antrim	--	--	--	90	324	--	--	--	135	4,292	--	378	226	1,800
Arenac	--	--	--	61	36	--	--	--	10	7,020	86	2	--	213
Bay	--	--	--	--	--	--	--	--	--	168	--	--	--	--
Benzie	--	--	--	26	123	--	--	--	417	9,443	--	1,042	890	454
Charlevoix	--	--	--	--	23	--	--	--	28	1,061	--	104	19	187
Cheboygan	185	1,273	376	3,754	762	139	488	--	287	35,913	163	712	200	6,094
Clare	--	--	--	171	18	--	--	--	374	29,063	--	416	700	874
Crawford	9	64	2	26,439	3,155	7	15	--	60	18,362	--	192	90	1,300
Emmet	--	--	--	609	774	--	--	--	14	4,167	--	50	13	326
Gladwin	--	--	--	74	58	--	--	--	129	9,271	--	--	--	317
Grand Traverse	--	--	--	2,961	1,351	--	--	--	209	7,950	--	208	209	156
Iosco	--	--	14	137	51	--	8	--	207	7,081	159	48	14	2,032
Isabella	--	--	--	--	15	--	--	--	130	17,191	--	--	11	88
Kalkaska	1	10	--	480	5,290	1	3	--	185	15,974	--	600	280	872
Lake	--	--	--	6,184	318	--	--	--	752	28,059	--	1,458	1,076	1,083
Leelanau	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manistee	--	--	--	528	231	--	--	--	403	6,998	--	938	697	302
Mason	--	--	--	177	--	--	--	--	221	20,787	--	527	531	976
Mecosta	--	--	--	--	206	--	--	--	391	21,287	--	--	8	409
Midland	--	--	--	--	--	--	--	--	493	9,675	104	--	108	653
Missaukee	--	--	--	713	1,563	--	--	--	1,009	27,933	--	907	566	1,427
Montmorency	--	--	--	5,898	133	--	--	--	337	24,106	440	111	63	3,253
Newaygo	--	--	--	--	--	--	--	--	261	13,789	--	--	112	226
Oceana	--	--	--	--	--	--	--	--	97	7,238	--	123	38	33

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	--	--	--	5,110	189	--	--	--	121	14,387	121	23	15	1,331
Osceola	--	--	--	621	169	--	--	--	928	26,899	--	469	743	1,427
Oscoda	--	--	--	11,317	2,212	--	--	--	137	19,426	411	211	58	2,695
Otsego	18	120	106	5,542	1,590	13	160	--	135	12,797	--	463	129	3,213
Presque Isle	79	543	1,142	2,698	323	60	800	--	611	22,516	750	207	117	4,431
Roscommon	--	--	--	9,196	534	--	--	--	29	18,390	40	2	1	307
Wexford	--	--	--	1,107	3,749	--	--	--	289	19,155	--	1,146	638	936
Total	292	2,010	1,640	89,520	23,381	220	1,474	--	8,973	514,522	4,152	10,445	7,633	41,748
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	--	--	--	--	8	858	--	--	2	--
Barry	--	--	--	--	--	--	--	--	6	705	--	--	3	--
Berrien	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Branch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calhoun	--	--	--	--	--	--	--	--	--	40	--	--	--	--
Cass	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Clinton	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eaton	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Genessee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gratiot	--	--	--	--	--	--	--	--	--	130	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Huron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ionia	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kalamazoo	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kent	--	--	--	--	--	--	--	--	13	1029	--	--	2	--
Lapeer	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lenawee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Livingston	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Monroe	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Montcalm	--	--	--	--	46	--	--	--	59	3387	--	--	11	16
Muskegon	--	--	--	--	63	--	--	--	174	3963	--	--	157	17
Oakland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ottawa	--	--	--	--	--	--	--	--	28	1518	--	--	43	--
Saginaw	--	--	--	--	--	--	--	--	--	--	--	--	--	--
St. Clair	--	--	--	--	--	--	--	--	--	--	--	--	--	--
St. Joseph	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanilac	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tuscola	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Van Buren	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	109	--	--	--	288	11,630	--	--	218	33
State total	6,440	86,324	55,971	227,145	62,754	9,736	66,034	8,132	27,810	1,115,053	60,486	44,365	31,491	172,918

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	O. hard-woods	All species
EASTERN UPPER PENINSULA										
Alger	3,925	--	1,652	--	15,581	9,369	1,584	--	912	84,764
Chippewa	1,149	--	602	--	5,555	6,668	467	--	226	88,301
Delta	5,416	--	3,271	--	22,248	14,616	1,673	29	928	224,797
Luce	618	--	50	--	2,536	1,680	176	--	491	34,014
Mackinac	1,857	--	1,046	--	8,252	7,787	592	--	338	85,201
Menominee	2,962	--	1,404	--	12,306	7,659	1,238	62	628	130,099
Schoolcraft	3,411	--	1,640	--	13,671	8,473	1,255	--	720	99,710
Total	19,338	--	9,665	--	80,149	56,252	6,985	91	4,243	746,886
WESTERN UPPER PENINSULA										
Baraga	3,086	--	541	--	13,755	5,977	1,354	--	1,373	63,295
Dickinson	2,737	--	1,292	--	10,987	6,836	1,017	4	580	168,828
Gogebic	5,803	--	917	--	23,948	11,608	3,065	6	2,212	106,290
Houghton	4,936	--	926	--	21,728	9,938	2,258	38	2,068	80,330
Iron	5,125	--	885	--	22,421	11,396	2,698	239	2,028	162,788
Keweenaw	411	--	30	--	1,743	730	158	--	231	5,654
Marquette	8,029	--	2,906	--	31,800	18,525	3,490	7	2,069	252,247
Ontonagon	4,379	--	1,783	--	30,051	9,239	3,171	4	778	150,092
Total	34,506	--	9,280	--	156,433	74,249	17,211	298	11,339	989,524
NORTHERN LOWER PENINSULA										
Alcona	--	--	--	--	146	2,101	2,495	264	--	50,857
Alpena	--	--	--	--	62	914	360	39	--	22,433
Antrim	--	--	--	--	1,273	4,404	104	--	--	13,026
Arenac	--	--	--	--	7	254	--	--	--	7,689
Bay	--	--	--	--	--	--	--	--	--	168
Benzie	199	--	--	--	2,971	4,600	1,161	420	234	21,980
Charlevoix	13	--	--	--	116	142	6	--	--	1,699
Cheboygan	4	--	--	--	2,494	10,421	427	3	3	63,698
Clare	104	--	--	--	2,459	5,198	3,418	909	703	44,407
Crawford	--	--	--	--	814	3,898	4,590	448	122	59,567
Emmet	--	--	--	--	176	728	--	--	--	6,857
Gladwin	3	--	--	--	--	814	249	119	39	11,073
Grand Traverse	105	--	--	--	487	2,816	1,109	320	208	18,089
Iosco	4	--	--	--	47	1,069	493	91	149	11,604
Isabella	--	--	--	--	16	354	241	139	23	18,208
Kalkaska	177	--	--	--	1,774	4,827	1,513	1,181	521	33,689
Lake	336	--	--	--	3,433	8,924	8,397	6,231	2,996	69,247
Leelanau	--	--	--	--	--	--	--	--	--	--
Manistee	1	--	--	--	1,385	1,205	1,944	1,720	352	16,704
Mason	10	--	--	--	1,202	3,329	3,276	2,755	627	34,418
Mecosta	34	--	--	--	316	1,157	745	1,013	76	25,642
Midland	14	104	--	--	322	2,270	675	393	10	14,821
Missaukee	19	--	--	--	2,366	5,804	4,353	1,709	249	48,618
Montmorency	--	--	--	--	306	2,702	2,682	221	--	40,252
Newaygo	49	--	--	--	250	1,703	6,752	6,078	1,141	30,361
Oceana	22	--	--	--	179	2,227	2,466	2,410	218	15,051

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)										
Ogemaw	3	--	--	--	234	1,260	1,397	357	10	24,558
Osceola	184	--	--	--	2,434	3,593	2,707	1,334	312	41,820
Oscoda	--	--	--	--	636	3,157	5,970	427	--	46,657
Otsego	3	--	--	--	1,727	6,764	14	1	2	32,797
Presque Isle	--	--	--	--	628	4,561	726	78	--	40,270
Roscommon	1	--	--	--	8	846	1,433	988	106	31,881
Wexford	139	--	--	--	1,195	4,256	2,445	861	451	36,367
Total	1,424	104	--	--	29,463	96,298	62,148	30,509	8,552	934,508
SOUTHERN LOWER PENINSULA										
Allegan	--	--	--	--	1	1,905	2,299	2,485	5	7,563
Barry	1	--	--	--	17	20	304	307	12	1,375
Berrien	--	--	--	--	--	--	--	--	--	--
Branch	--	--	--	--	--	194	164	177	--	535
Calhoun	--	--	--	--	--	--	--	--	--	40
Cass	--	--	--	--	--	741	625	675	--	2,041
Clinton	--	--	--	--	--	--	--	--	--	--
Eaton	--	--	--	--	--	--	--	--	--	--
Genessee	--	--	--	--	--	--	--	--	--	--
Gratiot	--	--	--	--	--	--	--	--	--	130
Hillsdale	--	--	--	--	--	--	--	--	--	--
Huron	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--
Ionia	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--
Kalamazoo	--	--	--	--	--	--	205	--	--	205
Kent	--	--	--	--	17	46	234	129	38	1,508
Lapeer	--	--	--	--	--	--	--	--	--	--
Lenawee	--	--	--	--	--	--	--	--	--	--
Livingston	--	--	--	--	--	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	--	--	--
Monroe	--	--	--	--	--	--	--	--	--	--
Montcalm	--	--	--	--	9	1,414	1,225	1,294	20	7,481
Muskegon	13	--	--	--	32	1,181	6,069	5,838	910	18,417
Oakland	--	--	--	--	--	--	--	--	--	--
Ottawa	6	--	--	--	20	120	703	732	21	3,191
Saginaw	--	--	--	--	--	--	--	--	--	--
St. Clair	--	--	--	--	--	--	--	--	--	--
St. Joseph	--	--	--	--	--	542	456	493	--	1,491
Sanilac	--	--	--	--	--	--	--	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--
Tuscola	--	--	--	--	--	--	--	--	--	--
Van Buren	--	--	--	--	--	710	599	648	--	1,957
Washtenaw	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
Total	20	--	--	--	96	6,873	12,883	12,778	1,006	45,934
State total	55,288	104	18,945	--	266,141	233,672	99,227	43,676	25,140	2,716,852

Table 8.--Pulpwood receipts in Michigan by species group, 1946-1990

(In thousand standard cords, unpeeled) 1/

	Roundwood									Residue	
Year	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	416	85	38	81	133	2	69	2/	8	--	--
1947	444	141	60	64	118	1	50	1	9	--	--
1948	485	132	76	46	132	1	78	--	19	--	1
1949	258	53	45	7	88	--	40	2/	25	--	--
1950	383	66	60	40	101	--	87	1	28	--	--
1951	582	134	81	100	108	--	126	2/	33	--	--
1952	449	80	68	60	116	--	102	1	22	--	--
1953	451	75	54	45	102	--	142	--	33	--	--
1954	412	37	53	2/	97	--	198	--	27	--	--
1955	455	20	53	2	102	--	240	--	38	--	--
1956	535	31	61	2/	92	--	323	--	28	--	--
1957	533	48	83	2	90	--	264	1	45	--	--
1958	549	107	70	2/	73	--	234	--	65	--	--
1959	699	116	70	1	94	--	336	--	81	--	1
1960	810	128	85	2	94	--	431	5	65	--	--
1961	700	109	68	2/	75	--	351	6	91	--	--
1962	679	97	35	--	29	--	387	14	117	--	--
1963	742	84	49	--	78	--	399	9	123	--	--
1964	791	107	40	2/	68	2/	429	18	127	--	2
1965	825	114	35	4	71	--	436	29	118	--	18
1966	1,004	143	44	5	78	--	526	8	159	--	41
1967	774	117	46	2	81	--	323	6	161	--	38
1968	774	133	35	3	61	--	328	11	147	--	56
1969	771	116	19	2	16	--	358	22	152	--	86
1970	805	152	26	3	22	--	332	28	154	11	77
1971	700	115	19	2	17	2/	298	22	165	1	61
1972	931	127	27	22	14	7	322	35	282	9	86
1973	1,199	135	37	36	14	4	404	64	351	12	142
1974	1,324	156	33	29	12	6	482	77	369	9	151
1975	844	167	18	23	7	4	288	33	171	8	125
1976	1,115	213	21	56	11	5	327	53	258	17	154
1977	1,233	208	51	62	25	10	370	48	269	17	173
1978	1,332	218	54	51	20	8	423	71	311	21	155
1979 3/	1,490	222	47	46	13	10	527	85	343	13	184
1980	1,493	202	51	52	28	12	525	73	393	11	146
1981	1,448	188	67	37	22	15	486	85	383	14	151
1982	1,387	216	69	52	44	19	493	73	305	11	105
1983	1,787	204	63	46	51	27	746	114	371	17	148
1984	2,000	234	46	46	37	22	833	103	494	14	171
1985	2,264	264	64	34	57	52	819	103	686	20	165
1986	2,630	268	80	40	71	55	811	272	822	54	157
1987	2,610	239	89	35	68	67	783	276	809	73	171
1988	2,925	231	108	33	61	35	947	323	936	63	188
1989	3,073	179	129	40	76	43	1,073	362	908	68	195
1990	2,913	230	79	43	13	12	1,068	304	879	76	209

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.

Table 9.--Pulpwood receipts in Michigan by area of origin, 1946-1990

(In thousand standard cords, unpeeled) 1/

Year	All areas	Area of Origin				
		Michigan	Wisconsin	Minnesota	Other states	Canada
1946	416	259	--	12	--	145
1947	444	239	42	21	--	142
1948	485	271	--	22	1	191
1949	258	130	--	3	2/	125
1950	383	258	--	3	--	122
1951	582	398	4	9	1	170
1952	449	290	5	1	2	151
1953	451	319	11	11	2/	110
1954	412	309	2/	4	2/	99
1955	455	356	--	5	--	94
1956	535	437	--	7	--	91
1957	533	427	--	9	--	97
1958	549	458	--	7	--	84
1959	699	603	3	7	--	86
1960	810	727	2/	2/	--	83
1961	700	628	1	--	--	71
1962	679	677	1	1	--	--
1963	742	669	2	--	--	71
1964	791	730	2	--	--	59
1965	825	750	1	--	--	74
1966	1,004	902	3	2/	2	97
1967	774	685	2/	2/	4	85
1968	774	702	4	2/	7	61
1969	771	751	9	--	9	2
1970	805	784	10	2/	10	1
1971	700	689	2/	2/	11	2/
1972	931	917	3	2/	11	--
1973	1,199	1,131	55	2/	13	--
1974	1,324	1,290	25	2/	9	--
1975	844	815	19	--	10	--
1976	1,115	1,081	24	--	7	3
1977	1,233	1,159	65	--	9	--
1978	1,332	1,248	70	--	10	4
1979 3/	1,490	1,428	46	--	14	2
1980	1,493	1,443	35	--	12	3
1981	1,448	1,402	26	--	16	4
1982	1,387	1,340	28	--	16	3
1983	1,787	1,747	23	--	17	--
1984	2,000	1,934	45	--	18	3
1985	2,058	1,973	64	--	17	4
1986	2,631	2,429	177	2/	16	9
1987	2,611	2,420	161	--	19	11
1988	2,855	2,597	233	2	22	1
1989	3,073	2,777	272	2	22	--
1990	2,913	2,645	243	1	21	3

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 10.- -Pulpwood receipts in Michigan by species group and area of origin, 1990

(In thousand standard cords, unpeeled) 1/

Type of material and species group	Total receipts	Origin of material				
		Michigan	Minnesota	Wisconsin	Other U.S.	Canada
ROUNDWOOD						
SOFTWOODS						
Cedar	6	6	--	3/	--	3/
Balsam fir	79	78	--	1	--	3/
Hemlock	43	43	--	3/	--	3/
Jack pine	167	167	--	3/	--	3/
Red pine	53	53	--	3/	--	3/
White pine	9	9	--	3/	--	3/
Spruce	13	13	--	3/	--	3/
Tamarack	6	6	--	3/	--	3/
Total	376	375	--	2	--	3/
HARDWOODS						
Ash	27	24	--	3	--	3/
Aspen	1,069	1,011	--	57	--	1
Balsam poplar	60	60	--	3/	--	3/
Basswood	50	43	--	7	--	3/
Beech	29	29	--	3/	--	3/
White birch	244	169	1	74	--	3/
Yellow birch	59	49	--	10	--	3/
Cottonwood	1	3/	--	--	--	--
Elm	21	19	--	2	--	--
Hickory	--	--	--	--	--	--
Hard maple	278	236	--	42	--	3/
Soft maple	242	221	--	21	--	3/
Red oak	103	97	--	6	--	3/
White oak	43	43	--	--	--	--
Other hardwoods	24	21	--	3	--	3/
Total	2,250	2,023	1	225	--	1
All species	2,626	2,398	1	227	--	1
RESIDUES 2/						
Softwood	76	75	--	1	--	3/
Hardwood	209	171	--	15	21	2
Total	285	246	--	16	21	2
ALL MATERIAL	2,911	2,644	1	243	21	3

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

3/ Less than 500 cords

Table 11.--Saw-log production and receipts in Michigan by species group, 1988 and 1990

(In thousand board feet) 1/

Species group	Production			Receipts		
	1988	1990	Change	1988	1990	Change
SOFTWOODS						
Cedar	11,032	12,223	1,191	11,123	12,015	892
Balsam fir	596	1,675	1,079	368	1,580	1,212
Hemlock	2,097	2,655	558	1,916	2,484	568
Jack pine	14,212	9,978	-4,234	11,240	7,318	-3,922
Red pine	82,668	80,660	-2,008	79,675	75,401	-4,274
White pine	21,375	24,379	3,004	19,461	21,594	2,133
Spruce	2,119	3,763	1,644	1,978	3,712	1,734
Tamarack	23	214	191	23	2	-21
Total	134,122	135,547	1,425	125,784	124,106	-1,678
HARDWOODS						
Ash	26,861	14,804	-12,057	26,436	12,972	-13,464
Aspen	113,384	104,591	-8,793	104,842	95,451	-9,391
Balsam poplar	3,079	904	-2,175	2,878	852	-2,026
Basswood	22,374	24,282	1,908	19,958	18,715	-1,243
Beech	16,542	17,545	1,003	16,330	17,152	822
Paper birch	9,338	9,215	-123	8,896	7,632	-1,264
Yellow birch	16,251	7,974	-8,277	15,488	7,016	-8,472
Cottonwood	3,002	2,752	-250	2,908	2,679	-229
Elm	1,787	1,107	-680	1,388	880	-508
Hickory	2,841	2,234	-607	2,426	1,678	-748
Hard maple	104,295	110,337	6,042	99,432	102,568	3,136
Soft maple	63,395	60,038	-3,357	61,636	57,302	-4,334
Red oak	109,685	107,011	-2,674	114,524	106,094	-8,430
White oak	19,358	19,288	-70	19,277	18,033	-1,244
Walnut	896	1,216	320	724	796	72
Other hardwoods	6,459	5,992	-467	5,658	4,071	-1,587
Total	519,547	489,290	-30,257	502,801	453,891	-48,910
All species	653,669	624,837	-28,832	628,585	577,997	-50,588

1/ International 1/4-inch rule.

Table 12.--Saw-log production by Forest Survey Unit, species group, and State of destination, Michigan, 1990

(Thousand board feet) 1/

ALL UNITS

Species	Total	Michigan	Wisconsin	Minnesota	Indiana
SOFTWOODS					
Cedar	12,223	11,935	288	--	--
Balsam fir	1,675	1,578	97	--	--
Hemlock	2,655	2,484	171	--	--
Jack pine	9,978	7,318	2,660	--	--
Red pine	80,660	75,332	5,327	1	--
White pine	24,379	21,581	2,787	11	--
Spruce	3,763	3,708	54	1	--
Tamarack	214	2	212	--	--
Total	135,547	123,938	11,596	13	--
HARDWOODS					
Ash	14,804	12,752	728	--	1,324
Aspen	104,591	95,184	9,407	--	--
Balsam poplar	904	852	52	--	--
Basswood	24,282	18,091	5,627	--	564
Beech	17,545	17,077	--	--	468
White birch	9,215	7,485	1,652	--	78
Yellow birch	7,974	6,981	993	--	--
Cottonwood	2,752	2,607	--	--	145
Elm	1,107	880	--	--	227
Hickory	2,234	1,583	--	--	651
Hard maple	110,337	102,113	6,855	--	1,369
Soft maple	60,038	57,042	1,672	--	1,324
Red oak	107,011	101,508	1,916	--	3,587
White oak	19,288	17,712	--	--	1,576
Walnut	1,216	680	--	--	536
Other hardwoods	5,992	3,962	50	--	1,980
Total	489,290	446,509	28,952	--	13,829
All species	624,837	570,447	40,548	13	13,829

(Table 12 continued on next page)

(Table 12 continued)

Species	Total	Michigan	Wisconsin	Minnesota	Indiana
EASTERN UPPER PENINSULA					
SOFTWOODS					
Cedar	7,741	7,485	256	--	--
Balsam fir	947	947	--	--	--
Hemlock	404	404	--	--	--
Jack pine	43	43	--	--	--
Red pine	7,260	7,260	--	--	--
White pine	6,437	6,437	--	--	--
Spruce	1,813	1,813	--	--	--
Tamarack	2	2	--	--	--
Total	24,647	24,391	256	--	--
HARDWOODS					
Ash	426	376	50	--	--
Aspen	15,241	14,982	259	--	--
Balsam poplar	419	398	21	--	--
Basswood	1,298	1,178	120	--	--
Beech	11,648	11,648	--	--	--
White birch	2,072	1,803	241	--	28
Yellow birch	1,016	1,016	--	--	--
Cottonwood	--	--	--	--	--
Elm	19	19	--	--	--
Hickory	--	--	--	--	--
Hard maple	14,201	14,040	161	--	--
Soft maple	6,544	6,530	14	--	--
Red oak	676	606	70	--	--
White oak	77	77	--	--	--
Walnut	--	--	--	--	--
Other hardwoods	253	253	--	--	--
Total	53,890	52,926	936	--	28
All species	78,537	77,317	1,192	--	28
WESTERN UPPER PENINSULA					
SOFTWOODS					
Cedar	1,173	1,141	32	--	--
Balsam fir	149	52	97	--	--
Hemlock	2,105	1,934	171	--	--
Jack pine	2,762	102	2,660	--	--
Red pine	12,239	6,911	5,327	1	--
White pine	10,783	7,985	2,787	11	--
Spruce	1,444	1,389	54	1	--
Tamarack	212	--	212	--	--
Total	30,867	19,514	11,340	13	--
HARDWOODS					
Ash	1,498	820	678	--	--
Aspen	17,805	8,657	9,148	--	--
Balsam poplar	385	354	31	--	--
Basswood	9,172	3,665	5,507	--	--
Beech	194	194	--	--	--
White birch	3,343	1,882	1,411	--	50
Yellow birch	6,761	5,768	993	--	--
Cottonwood	--	--	--	--	--
Elm	301	301	--	--	--
Hickory	--	--	--	--	--
Hard maple	63,562	56,856	6,694	--	12
Soft maple	17,581	15,923	1,658	--	--
Red oak	5,802	3,932	1,846	--	24
White oak	25	25	--	--	--
Walnut	--	--	--	--	--
Other hardwoods	340	284	50	--	6
Total	126,769	98,661	28,016	--	92
All species	157,636	118,175	39,356	13	92

(Table 12 continued on next page)

(Table 12 continued)

Species	Total	Michigan	Wisconsin	Minnesota	Indiana
NORTHERN LOWER PENINSULA					
SOFTWOODS					
Cedar	3,307	3,307	--	--	--
Balsam fir	579	579	--	--	--
Hemlock	146	146	--	--	--
Jack pine	7,172	7,172	--	--	--
Red pine	57,515	57,515	--	--	--
White pine	6,929	6,929	--	--	--
Spruce	504	504	--	--	--
Tamarack	--	--	--	--	--
Total	76,152	76,152	--	--	--
HARDWOODS					
Ash	5,883	5,883	--	--	--
Aspen	67,442	67,442	--	--	--
Balsam poplar	--	--	--	--	--
Basswood	11,439	11,439	--	--	--
Beech	4,383	4,383	--	--	--
White birch	3,673	3,673	--	--	--
Yellow birch	178	178	--	--	--
Cottonwood	436	436	--	--	--
Elm	209	209	--	--	--
Hickory	64	64	--	--	--
Hard maple	27,978	27,978	--	--	--
Soft maple	23,479	23,479	--	--	--
Red oak	66,174	66,174	--	--	--
White oak	8,217	8,217	--	--	--
Walnut	7	7	--	--	--
Other hardwoods	1,432	1,432	--	--	--
Total	220,994	220,994	--	--	--
All species	297,146	297,146	--	--	--
SOUTHERN LOWER PENINSULA					
SOFTWOODS					
Cedar	2	2	--	--	--
Balsam fir	--	--	--	--	--
Hemlock	--	--	--	--	--
Jack pine	1	1	--	--	--
Red pine	3,646	3,646	--	--	--
White pine	230	230	--	--	--
Spruce	2	2	--	--	--
Tamarack	--	--	--	--	--
Total	3,881	3,881	--	--	--
HARDWOODS					
Ash	6,997	5,673	--	--	1,324
Aspen	4,103	4,103	--	--	0
Balsam poplar	100	100	--	--	0
Basswood	2,373	1,809	--	--	564
Beech	1,320	852	--	--	468
White birch	127	127	--	--	0
Yellow birch	19	19	--	--	0
Cottonwood	2,316	2,171	--	--	145
Elm	578	351	--	--	227
Hickory	2,170	1,519	--	--	651
Hard maple	4,596	3,239	--	--	1,357
Soft maple	12,434	11,110	--	--	1,324
Red oak	34,359	30,796	--	--	3,563
White oak	10,969	9,393	--	--	1,576
Walnut	1,209	673	--	--	536
Other hardwoods	3,967	1,993	--	--	1,974
Total	87,637	73,928	--	--	13,709
All species	91,518	77,809	--	--	13,709

Table 13.-- Saw-log production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

(In thousand board feet) 1/

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	340	1	5	16	679	539	3	--	44	755	--	165	4,668	90
Chippewa	1,128	266	11	--	254	174	436	--	57	2,315	--	14	1,123	72
Delta	1,818	260	349	18	2,020	1,355	342	2	103	3,150	398	304	577	368
Luce	43	28	23	--	1,109	1,018	39	--	3	1,296	--	21	2,607	145
Mackinac	1,325	255	9	--	364	289	379	--	20	3,387	--	169	1,191	687
Menominee	1,940	--	5	5	2,344	2,706	447	--	190	3,271	21	540	29	402
Schoolcraft	1,147	137	2	4	490	356	167	--	9	1,067	--	85	1,453	308
Total	7,741	947	404	43	7,260	6,437	1,813	2	426	15,241	419	1,298	11,648	2,072
WESTERN UPPER PENINSULA														
Baraga	253	13	873	163	278	356	670	26	133	1,478	52	250	11	314
Dickinson	133	27	--	38	1,492	1,100	17	2	53	3,340	3	418	2	481
Gogebic	6	14	9	162	888	169	11	70	477	1,399	--	1,036	--	93
Houghton	191	25	758	450	2,029	1,243	80	25	193	1,692	17	699	--	187
Iron	158	25	217	203	2,273	2,710	497	20	231	3,804	302	1,690	--	1,110
Keweenaw	53	5	--	--	63	454	2	--	6	236	--	22	--	92
Marquette	326	28	140	1,496	4,475	4,281	78	1	90	3,007	10	334	181	951
Ontonagon	53	12	108	250	741	470	89	68	315	2,849	1	4,723	--	115
Total	1,173	149	2,105	2,762	12,239	10,783	1,444	212	1,498	17,805	385	9,172	194	3,343
NORTHERN LOWER PENINSULA														
Alcona	50	4	--	204	1,567	236	--	--	239	8,653	--	20	29	93
Alpena	510	105	1	113	678	361	62	--	83	3,054	--	9	12	173
Antrim	4	3	14	--	245	14	2	--	196	382	--	1,340	284	80
Arenac	12	--	--	2	27	2	--	--	333	1,478	--	62	3	14
Bay	--	--	--	--	--	1	--	--	86	158	--	29	0	5
Benzie	1	--	--	--	1,180	63	--	--	118	52	--	405	739	249
Charlevoix	67	5	10	17	359	223	17	--	383	439	--	944	473	167
Cheboygan	713	181	13	347	1,680	676	209	--	131	1,265	--	941	152	612
Clare	41	--	--	12	538	25	--	--	100	1,211	--	19	14	7
Crawford	2	2	3	1,462	3,165	566	2	--	4	3,346	--	273	78	59
Emmet	137	109	10	--	1,092	93	107	--	338	421	--	1,289	443	100
Gladwin	--	--	--	18	113	55	--	--	141	2,514	--	33	0	140
Grand Traverse	12	--	8	42	1,075	73	--	--	39	247	--	204	104	108
Iosco	92	--	5	73	2,611	300	--	--	163	2,220	--	4	0	16
Isabella	1	--	--	--	18	2	--	--	99	577	--	19	4	8
Kalkaska	2	4	7	233	2,711	192	2	--	73	1,168	--	1,227	66	77
Lake	1	--	--	--	2,409	156	--	--	132	817	--	240	41	9
Leelanau	22	--	3	--	81	7	--	--	503	46	--	376	218	4
Manistee	2	--	--	--	5,436	63	--	--	113	468	--	165	224	50
Mason	--	--	14	--	1,404	18	--	--	75	420	--	248	154	19
Mecosta	1	--	--	--	491	19	--	--	140	645	--	80	2	53
Midland	4	--	--	--	112	46	--	--	170	2,904	--	86	41	25
Missaukee	8	--	--	126	1,747	288	--	--	332	1,633	--	301	61	183
Montmorency	165	30	1	703	1,711	265	28	--	134	4,488	--	337	93	214
Newaygo	1	--	--	--	5,008	211	--	--	260	1,230	--	165	155	18
Oceana	26	--	41	--	603	105	--	--	257	445	--	64	280	36

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	57	--	--	648	686	227	--	--	161	9,345	--	62	26	274
Osceola	12	--	--	--	1,371	44	--	--	296	976	--	213	166	74
Oscoda	--	--	--	2,068	4,208	629	--	--	105	4,271	--	141	23	59
Otsego	3	5	14	308	1,945	1,022	25	--	144	3,127	--	1,675	269	159
Presque Isle	1,345	131	2	262	1,098	185	50	--	221	3,222	--	149	20	343
Roscommon	7	--	--	407	2,177	596	--	--	151	5,631	--	48	12	212
Wexford	9	--	--	127	9,969	166	--	--	163	589	--	271	197	33
Total	3,307	579	146	7,172	57,515	6,929	504	--	5,883	67,442	--	11,439	4,383	3,673
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	1,098	23	--	--	325	193	--	12	71	--
Barry	--	--	--	--	90	--	--	--	174	877	--	103	59	--
Berrien	--	--	--	--	--	--	--	--	396	58	--	139	182	6
Branch	--	--	--	--	--	--	--	--	314	1	--	70	--	--
Calhoun	--	--	--	--	--	--	--	--	847	19	--	452	133	--
Cass	--	--	--	--	--	--	--	--	286	12	--	256	87	--
Clinton	--	--	--	--	--	--	--	--	213	15	--	18	--	--
Eaton	--	--	--	--	--	--	--	--	307	8	--	88	65	--
Genessee	--	--	--	--	--	--	--	--	80	--	--	39	17	--
Gratiot	--	--	--	--	--	3	--	--	128	63	--	45	--	--
Hillsdale	--	--	--	--	--	--	--	--	86	--	--	55	--	--
Huron	--	--	--	--	28	2	--	--	46	635	75	15	2	42
Ingham	--	--	--	--	--	--	--	--	174	12	--	66	23	--
Ionia	--	--	--	--	--	--	--	--	43	45	--	70	52	--
Jackson	--	--	--	--	--	--	--	--	200	2	--	68	--	--
Kalamazoo	--	--	--	--	--	5	--	--	67	15	--	--	51	--
Kent	--	--	--	--	769	3	--	--	190	39	--	80	19	--
Lapeer	--	--	--	1	101	7	--	--	108	147	--	43	18	10
Lenawee	--	--	--	--	123	--	--	--	144	10	--	160	69	--
Livingston	--	--	--	--	2	2	2	--	65	5	--	7	--	--
Macomb	--	--	--	--	--	--	--	--	25	1	--	17	9	--
Monroe	--	--	--	--	--	--	--	--	47	--	--	51	--	--
Montcalm	1	--	--	--	681	113	--	--	464	659	--	59	41	10
Muskegon	--	--	--	--	151	27	--	--	98	121	--	--	184	4
Oakland	--	--	--	--	--	1	--	--	201	71	--	14	13	--
Ottawa	--	--	--	--	232	4	--	--	103	8	--	25	96	--
Saginaw	--	--	--	--	--	14	--	--	317	252	--	16	--	12
St. Clair	--	--	--	--	--	25	--	--	200	162	--	46	32	--
St. Joseph	--	--	--	--	--	--	--	--	476	15	--	79	--	--
Sanilac	--	--	--	--	--	--	--	--	34	436	10	6	3	18
Shiawassee	--	--	--	--	--	--	--	--	246	8	--	61	17	--
Tuscola	--	--	--	--	371	--	--	--	133	204	15	73	4	25
Van Buren	1	--	--	--	--	1	--	--	237	6	--	23	32	--
Washtenaw	--	--	--	--	--	--	--	--	151	1	--	51	28	--
Wayne	--	--	--	--	--	--	--	--	72	3	--	66	13	--
Total	2	--	--	1	3,646	230	2	--	6,997	4,103	100	2,373	1,320	127
State total	12,223	1,675	2,655	9,978	80,660	24,379	3,763	214	14,804	104,591	904	24,282	17,545	9,215

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	381	--	9	--	4,823	1,445	--	25	--	85	14,073
Chippewa	51	--	2	--	1,412	811	70	1	--	1	8,198
Delta	193	--	4	--	1,475	987	50	41	--	76	13,890
Luce	72	--	--	--	1,337	933	5	--	--	17	8,696
Mackinac	120	--	--	--	2,707	923	269	--	--	17	12,111
Menominee	41	--	4	--	897	361	282	10	--	13	13,508
Schoolcraft	158	--	--	--	1,550	1,084	--	--	--	44	8,061
Total	1,016	--	19	--	14,201	6,544	676	77	--	253	78,537
WESTERN UPPER PENINSULA											
Baraga	1,577	--	45	--	11,453	2,312	249	--	--	66	20,572
Dickinson	104	--	34	--	1,741	1,223	640	--	--	--	10,848
Gogebic	797	--	34	--	12,179	977	225	--	--	29	18,575
Houghton	1,674	--	63	--	11,263	2,212	499	--	--	22	23,322
Iron	1,398	--	43	--	10,558	2,454	1,239	--	--	182	29,114
Keweenaw	105	--	--	--	537	232	430	--	--	--	2,237
Marquette	543	--	6	--	10,398	7,236	2,354	25	--	34	35,994
Ontonagon	563	--	76	--	5,433	935	166	--	--	7	16,974
Total	6,761	--	301	--	63,562	17,581	5,802	25	--	340	157,636
NORTHERN LOWER PENINSULA											
Alcona	1	--	--	--	144	561	3,121	86	--	5	15,013
Alpena	--	--	--	--	41	1,046	1,208	49	--	--	7,505
Antrim	11	--	49	--	1,808	321	--	--	--	14	4,767
Arenac	1	47	1	1	85	377	460	15	1	8	2,929
Bay	--	56	--	--	--	66	16	31	--	--	448
Benzie	--	--	--	--	2,515	521	652	1,058	1	90	7,644
Charlevoix	59	--	2	--	1,643	256	107	--	--	11	5,182
Cheboygan	6	--	11	--	1,629	1,107	661	8	1	4	10,347
Clare	--	2	--	1	60	636	3,504	634	--	92	6,896
Crawford	--	--	3	1	294	358	3,450	233	--	2	13,303
Emmet	11	--	4	--	2,536	343	401	--	--	28	7,462
Gladwin	--	167	14	--	1	842	1,021	137	--	6	5,202
Grand Traverse	5	--	4	1	1,043	538	601	175	--	14	4,293
Iosco	1	12	--	--	154	441	502	14	--	2	6,610
Isabella	--	51	--	--	20	238	686	135	--	6	1,864
Kalkaska	14	--	35	--	2,329	903	989	39	--	71	10,142
Lake	1	--	5	--	193	767	8,106	938	--	88	13,903
Leelanau	3	--	--	--	1,584	60	100	1	1	1	3,010
Manistee	1	--	2	--	1,178	723	2,106	342	--	113	10,986
Mason	3	--	2	--	565	561	2,830	659	--	22	6,994
Mecosta	1	--	5	--	157	287	409	149	--	63	2,502
Midland	1	76	1	2	3	610	627	230	1	5	4,944
Missaukee	--	4	9	--	974	1,200	2,544	139	2	77	9,628
Montmorency	--	--	6	--	752	961	2,543	46	--	1	12,478
Newaygo	11	1	6	55	460	2,452	8,534	1,824	--	206	20,597
Oceana	6	18	1	--	777	1,834	4,127	505	--	174	9,299

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	1	--	2	--	146	1,012	2,484	36	--	6	15,173
Osceola	8	2	1	3	1,044	848	1,211	71	--	136	6,476
Oscoda	--	--	--	--	178	576	2,747	99	--	2	15,106
Otsego	23	--	26	--	3,826	658	714	8	--	35	13,986
Presque Isle	3	--	10	--	398	512	459	2	--	--	8,412
Roscommon	1	--	--	--	48	1,186	7,521	448	--	7	18,452
Wexford	6	--	10	--	1,393	678	1,733	106	--	143	15,593
Total	178	436	209	64	27,978	23,479	66,174	8,217	7	1,432	297,146
SOUTHERN LOWER PENINSULA											
Allegan	1	2	8	31	38	454	2,099	553	--	175	5,083
Barry	1	6	7	99	610	535	2,817	355	--	246	5,979
Berrien	1	149	135	54	578	320	1,094	222	15	904	4,253
Branch	--	27	14	97	76	858	248	311	12	124	2,152
Calhoun	1	25	14	269	109	672	720	721	15	609	4,606
Cass	4	17	106	125	407	608	970	599	209	538	4,224
Clinton	--	1	--	38	31	162	315	59	9	1	862
Eaton	--	13	116	109	433	190	206	99	30	13	1,677
Genessee	--	5	2	5	60	106	166	117	6	6	609
Gratiot	--	28	--	--	49	244	642	176	1	--	1,379
Hillsdale	--	5	5	26	262	103	148	57	19	35	801
Huron	--	802	2	--	2	122	9	2	--	2	1,786
Ingham	--	35	10	30	113	103	190	127	1	31	915
Ionia	--	--	3	--	40	72	358	21	3	20	727
Jackson	1	9	6	215	--	199	2,240	614	93	161	3,808
Kalamazoo	1	14	4	54	5	219	699	32	3	148	1,317
Kent	--	6	8	20	341	624	2,717	404	--	79	5,299
Lapeer	2	121	8	23	115	716	364	420	--	6	2,210
Lenawee	--	22	4	111	368	130	209	183	25	10	1,568
Livingston	--	--	--	51	--	144	1,260	363	--	46	1,947
Macomb	1	5	5	2	49	132	--	16	--	--	262
Monroe	--	75	3	80	43	93	446	225	32	15	1,110
Montcalm	--	--	42	15	76	1,084	2,900	1,064	4	55	7,268
Muskegon	1	--	1	--	23	988	4,171	688	--	21	6,478
Oakland	--	9	5	50	23	138	938	363	6	29	1,861
Ottawa	2	9	5	1	102	376	1,076	166	--	13	2,218
Saginaw	--	70	1	52	102	712	767	502	1	4	2,822
St. Clair	2	501	2	5	108	463	496	530	--	11	2,583
St. Joseph	--	--	26	357	75	520	2,430	474	590	190	5,232
Sanilac	--	58	--	--	21	191	29	3	--	--	809
Shiawassee	--	17	--	31	42	164	618	193	2	40	1,439
Tuscola	--	218	1	--	72	330	105	43	2	33	1,629
Van Buren	1	40	23	96	164	370	1,633	191	6	346	3,170
Washtenaw	--	18	--	121	46	220	892	875	122	56	2,581
Wayne	--	9	12	3	13	72	387	201	3	--	854
Total	19	2,316	578	2,170	4,596	12,434	34,359	10,969	1,209	3,967	91,518
State total	7,974	2,752	1,107	2,234	110,337	60,038	107,011	19,288	1,216	5,992	624,837

1/ International 1/4-inch rule.

Table 14.-- Saw-log receipts in Michigan by Forest Survey Unit, species group, and State of origin, 1990

(In thousand board feet)

	ALL UNITS						
Species group	Total	Michigan	Wisconsin	Ohio	Indiana	Minnesota	Kentucky
SOFTWOODS							
Cedar	12,015	11,935	80	--	--	--	--
Balsam fir	1,580	1,578	2	--	--	--	--
Hemlock	2,484	2,484	--	--	--	--	--
Jack pine	7,318	7,318	--	--	--	--	--
Red pine	75,401	75,332	69	--	--	--	--
White pine	21,594	21,581	13	--	--	--	--
Spruce	3,712	3,708	4	--	--	--	--
Tamarack	2	2	--	--	--	--	--
Total	124,106	123,938	168	--	--	--	--
HARDWOODS							
Ash	12,972	12,752	20	99	101	--	--
Aspen	95,451	95,184	267	--	--	--	--
Balsam poplar	852	852	--	--	--	--	--
Basswood	18,715	18,091	462	36	36	90	--
Beech	17,152	17,077	3	36	36	--	--
Paper birch	7,632	7,485	147	--	--	--	--
Yellow birch	7,016	6,981	34	--	--	1	--
Cottonwood	2,679	2,607	--	36	36	--	--
Elm	880	880	--	--	--	--	--
Hickory	1,678	1,583	--	48	47	--	--
Hard maple	102,568	102,113	322	62	64	7	--
Soft maple	57,302	57,042	168	44	46	2	--
Red oak	106,094	101,508	3,555	525	506	--	--
White oak	18,033	17,712	--	162	159	--	--
Walnut	796	680	--	48	60	--	8
Other hardwoods	4,071	3,962	--	67	42	--	--
Total	453,891	446,509	4,978	1,163	1,133	100	8
All species	577,997	570,447	5,146	1,163	1,133	100	8

(Table 14 continued on next page)

(Table 14 continued)

Species group	Total	Michigan	Wisconsin	Ohio	Indiana	Minnesota
EASTERN UPPER PENINSULA						
SOFTWOODS						
Cedar	4,488	4,441	47	--	--	--
Balsam fir	28	28	--	--	--	--
Hemlock	1,528	1,528	--	--	--	--
Jack pine	45	45	--	--	--	--
Red pine	13,237	13,187	50	--	--	--
White pine	13,288	13,275	13	--	--	--
Spruce	1,227	1,227	--	--	--	--
Tamarack	2	2	--	--	--	--
Total	33,843	33,733	110	--	--	--
HARDWOODS						
Ash	475	455	20	--	--	--
Aspen	13,256	13,083	173	--	--	--
Balsam poplar	407	407	--	--	--	--
Basswood	1,415	1,340	75	--	--	--
Beech	11,167	11,164	3	--	--	--
White birch	2,306	2,200	106	--	--	--
Yellow birch	1,360	1,351	9	--	--	--
Elm	4	4	--	--	--	--
Hard maple	20,645	20,467	178	--	--	--
Soft maple	8,165	8,009	156	--	--	--
Red oak	4,851	1,315	3,536	--	--	--
White oak	102	102	--	--	--	--
Other hardwoods	356	356	--	--	--	--
Total	64,509	60,253	4,256	--	--	--
All species	98,352	93,986	4,366	--	--	--
WESTERN UPPER PENINSULA						
SOFTWOODS						
Cedar	651	618	33	--	--	--
Balsam fir	55	53	2	--	--	--
Hemlock	768	768	--	--	--	--
Jack pine	100	100	--	--	--	--
Red pine	894	875	19	--	--	--
White pine	1,000	1,000	--	--	--	--
Spruce	853	849	4	--	--	--
Total	4,321	4,263	58	--	--	--
HARDWOODS						
Ash	727	727	--	--	--	--
Aspen	8,093	7,999	94	--	--	--
Balsam poplar	345	345	--	--	--	--
Basswood	4,020	3,543	387	--	--	90
Beech	87	87	--	--	--	--
White birch	1,333	1,292	41	--	--	--
Yellow birch	5,460	5,434	25	--	--	1
Elm	316	316	--	--	--	--
Hard maple	50,022	49,871	144	--	--	7
Soft maple	13,906	13,892	12	--	--	2
Red oak	2,970	2,951	19	--	--	--
Other hardwoods	181	181	--	--	--	--
Total	87,460	86,638	722	--	--	100
All species	91,781	90,901	780	--	--	100

(Table 14 continued on next page)

(Table 14 continued)

Species group	Total	Michigan	Wisconsin	Ohio	Indiana	Kentucky
NORTHERN LOWER PENINSULA						
SOFTWOODS						
Cedar	6,867	6,867	--	--	--	--
Balsam fir	1,497	1,497	--	--	--	--
Hemlock	185	185	--	--	--	--
Jack pine	7,172	7,172	--	--	--	--
Red pine	59,950	59,950	--	--	--	--
White pine	7,007	7,007	--	--	--	--
Spruce	1,630	1,630	--	--	--	--
Total	84,308	84,308	--	--	--	--
HARDWOODS						
Ash	4,994	4,994	--	--	--	--
Aspen	69,367	69,367	--	--	--	--
Basswood	10,526	10,526	--	--	--	--
Beech	4,892	4,892	--	--	--	--
White birch	3,857	3,857	--	--	--	--
Yellow birch	192	192	--	--	--	--
Cottonwood	391	391	--	--	--	--
Elm	163	163	--	--	--	--
Hickory	60	60	--	--	--	--
Hard maple	26,389	26,389	--	--	--	--
Soft maple	20,146	20,146	--	--	--	--
Red oak	56,133	56,133	--	--	--	--
White oak	6,749	6,749	--	--	--	--
Walnut	62	62	--	--	--	--
Other hardwoods	1,072	1,072	--	--	--	--
Total	204,993	204,993	--	--	--	--
All species	289,301	289,301	--	--	--	--
SOUTHERN LOWER PENINSULA						
SOFTWOODS						
Cedar	9	9	--	--	--	--
Hemlock	3	3	--	--	--	--
Jack pine	1	1	--	--	--	--
Red pine	1,320	1,320	--	--	--	--
White pine	299	299	--	--	--	--
Spruce	2	2	--	--	--	--
Total	1,634	1,634	--	--	--	--
HARDWOODS						
Ash	6,776	6,576	--	99	101	--
Aspen	4,735	4,735	--	--	--	--
Balsam poplar	100	100	--	--	--	--
Basswood	2,754	2,682	--	36	36	--
Beech	1,006	934	--	36	36	--
White birch	136	136	--	--	--	--
Yellow birch	4	4	--	--	--	--
Cottonwood	2,288	2,216	--	36	36	--
Elm	397	397	--	--	--	--
Hickory	1,618	1,523	--	48	47	--
Hard maple	5,512	5,386	--	62	64	--
Soft maple	15,085	14,995	--	44	46	--
Red oak	42,140	41,109	--	525	506	--
White oak	11,182	10,861	--	162	159	--
Walnut	734	618	--	48	60	8
Other hardwoods	2,462	2,353	--	67	42	--
Total	96,929	94,625	--	1,163	1,133	8
All species	98,563	96,259	--	1,163	1,133	8

1/ International 1/4-inch rule.

Table 15.--Veneer log production and receipts in Michigan for selected years, 1946-1990

(In thousand board feet) 1/

Year	Production	Receipts
1946	78,858	46,055
1948	77,684	53,899
1950	53,568	37,404
1952	40,219	28,547
1954	34,499	21,872
1956	39,655	23,564
1958	19,958	12,597
1960	18,487	12,075
1963	15,300	7,598
1965	20,392	12,428
1966	21,942	12,782
1968	19,333	9,573
1969	19,194	14,970
1970	15,039	6,729
1972	18,479	5,324
1974 2/	25,949	25,322
1975	26,079	26,851
1976	33,373	28,764
1977	42,738	30,838
1978	35,030	39,179
1980	36,761	27,287
1984	31,753	13,737
1988	36,201	39,220
1990	37,836	41,736

1/ International 1/4-inch rule.

2/ Includes veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 16.--Veneer log production and receipts by species group in Michigan, 1988 and 1990

(In thousand board feet) 1/

Species group	Production			Receipts		
	1988	1990	Change	1988	1990	Change
Red pine	176	445	269	2,316	1,335	-981
White pine	973	1,755	782	1,912	2,783	871
Spruce	--	2,077	2,077	--	6,232	6,232
Tamarack	--	213	213	--	635	635
Ash	1,059	831	-228	920	711	-209
Aspen	4,974	4,885	-89	15,148	13,706	-1,442
Basswood	1,075	1,334	259	275	78	-197
Beech	773	283	-490	247	12	-235
White birch	1,088	1,262	174	990	1,159	169
Yellow birch	2,617	1,869	-748	1,725	1,288	-437
Cottonwood	286	60	-226	400	238	-162
Elm	56	44	-12	92	16	-76
Hickory	51	59	8	68	58	-10
Hard maple	11,386	16,959	5,573	6,837	9,292	2,455
Soft maple	755	1,041	286	283	237	-46
Red oak	6,087	3,580	-2,507	1,896	1,922	26
White oak	1,309	690	-619	3,159	1,569	-1,590
Walnut	390	111	-279	196	122	-74
Other species	3,146	338	-2,808	2,756	343	-2,413
All species	36,201	37,836	1,635	39,220	41,736	2,516

1/ International 1/4-inch rule.

Table 17.-- Veneer log and bolt production in Michigan by species group and destination, 1990

(In thousand board feet) 1/

Species group	Total	Destination						
		Michigan	Wisconsin	Ohio	Indiana	Iowa	Other States	Canada
SOFTWOODS								
Cedar	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--
Jack pine	--	--	--	--	--	--	--	--
Red pine	445	445	--	--	--	--	--	--
White pine	1,755	927	125	--	--	--	--	703
Spruce	2,077	2,077	--	--	--	--	--	--
Tamarack	213	213	--	--	--	--	--	--
Total	4,490	3,662	125	--	--	--	--	703
HARDWOODS								
Ash	831	678	150	--	--	--	3	--
Aspen	4,885	4,683	202	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--
Basswood	1,334	78	1,256	--	--	--	--	--
Beech	283	5	278	--	--	--	--	--
White birch	1,262	1,133	118	--	11	--	--	--
Yellow birch	1,869	1,211	625	--	33	--	--	--
Cottonwood	60	60	--	--	--	--	--	--
Elm	44	16	--	--	--	23	5	--
Hickory	59	56	--	--	--	--	3	--
Hard maple	16,959	7,835	8,912	14	163	22	13	--
Soft maple	1,041	226	815	--	--	--	--	--
Red oak	3,580	1,383	1,736	51	402	--	8	--
White oak	690	484	74	45	64	23	--	--
Walnut	111	23	--	--	88	--	--	--
Other hardwoods	338	191	76	--	71	--	--	--
Total	33,346	18,062	14,242	110	832	68	32	--
All species	37,836	21,724	14,367	110	832	68	32	703

1/ International 1/4-inch rule.

Table 18.--Veneer log receipts in Michigan by area of origin for selected years, 1946-1990

(In thousand board feet) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	2/ Canada
1946	46,055	44,534	--	--	956	565
1948	53,899	50,151	127	--	699	2,922
1950	37,404	33,125	454	73	477	3,275
1952	28,547	24,077	1,046	341	650	2,433
1954	21,872	18,596	582	183	137	2,374
1956	23,564	20,341	105	177	80	2,861
1958	12,597	10,785	80	166	40	1,526
1960	12,075	8,628	450	500	245	2,252
1963	7,598	5,315	495	235	165	1,388
1965	12,428	10,344	805	102	180	997
1966	12,782	10,654	585	138	206	1,199
1968	9,573	8,375	332	173	283	410
1969	14,970	12,663	1,498	300	59	450
1970	6,729	5,399	79	77	246	928
1972	5,324	4,565	66	33	--	660
1974 3/	25,322	12,724	11,136	1,092	--	370
1975	26,851	15,609	10,885	357	--	--
1976	28,764	18,516	9,830	418	--	--
1977	30,838	30,378	--	--	460	--
1978	39,179	22,597	15,000	1,000	525	57
1980	27,287	22,087	5,200	--	--	--
1984	13,737	11,052	146	520	2,019	--
1988	39,220	18,623	16,502	--	4,095	--
1990	37,836	21,724	14,367	--	1,042	703

1/ International 1/4-inch rule.

2/ Includes only logs and bolts shipped to Canadian mills for processing.

3/ Includes all veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 19.-- Veneer log and bolt receipts in Michigan by species group and State of origin, 1990

(In thousand board feet) 1/

Species group	Total	Michigan	Wisconsin	Indiana	Ohio	Illinois	Pennsylvania	Kentucky	Tennessee	Other
SOFTWOODS										
Red pine	1,335	445	890	--	--	--	--	--	--	--
White pine	2,783	927	1,856	--	--	--	--	--	--	--
Spruce	6,232	2,077	4,155	--	--	--	--	--	--	--
Tamarack	635	213	422	--	--	--	--	--	--	--
Total	10,985	3,662	7,323	--	--	--	--	--	--	--
HARDWOODS										
Ash	711	678	3	3	6	3	3	3	3	9
Aspen	13,706	4,683	9,023	--	--	--	--	--	--	--
Basswood	78	78	--	--	--	--	--	--	--	--
Beech	12	5	--	7	--	--	--	--	--	--
White birch	1,159	1,133	26	--	--	--	--	--	--	--
Yellow birch	1,288	1,211	77	--	--	--	--	--	--	--
Cottonwood	238	60	--	178	--	--	--	--	--	--
Elm	16	16	--	--	--	--	--	--	--	--
Hickory	58	56	--	2	--	--	--	--	--	--
Hard maple	9,292	7,835	507	95	190	95	95	95	95	285
Soft maple	237	226	--	11	--	--	--	--	--	--
Red oak	1,922	1,383	49	49	98	49	49	49	49	147
White oak	1,569	484	86	225	172	86	86	86	86	258
Walnut	122	23	9	9	18	9	9	9	9	27
Other hardwoods	343	191	7	82	14	7	7	7	7	21
Total	30,751	18,062	9,787	661	498	249	249	249	249	747
All species	41,736	21,724	17,110	661	498	249	249	249	249	747

1/ International 1/4-inch rule.

Table 20.-- Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

(In thousand cubic feet)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	242	339	301	508	243	132	95	66	59	1,423	345	185	998	383
Chippewa	317	437	321	1,028	175	72	296	30	31	2,912	362	64	255	272
Delta	1,037	1,319	598	1,681	927	360	937	106	98	5,735	890	274	359	1,537
Luce	89	295	177	545	300	209	110	24	8	755	133	28	504	135
Mackinac	408	356	165	254	195	81	326	23	31	2,992	450	120	302	751
Menominee	1,236	687	306	539	683	533	581	87	156	4,380	321	231	107	1,761
Schoolcraft	492	793	318	700	405	144	268	63	46	1,853	374	151	390	479
Total	3,821	4,226	2,186	5,255	2,928	1,531	2,613	399	429	20,050	2,875	1,053	2,915	5,318
WESTERN UPPER PENINSULA														
Baraga	59	113	278	237	95	95	210	19	114	1,836	58	163	52	457
Dickinson	399	1,086	481	1,029	772	305	596	100	49	6,926	293	218	92	376
Gogebic	1	166	26	291	289	44	415	25	229	3,099	8	489	35	310
Houghton	49	128	212	202	437	247	148	20	166	1,690	87	323	75	579
Iron	168	381	354	542	664	553	1,517	55	197	5,212	122	523	59	1,411
Keweenaw	10	1	--	--	10	98	21	--	9	177	--	12	7	65
Marquette	271	735	604	2,967	1,062	920	481	86	127	7,113	541	389	215	1,852
Ontonagon	10	17	28	209	166	115	89	14	443	6,169	143	1,474	10	524
Total	967	2,627	1,983	5,477	3,495	2,377	3,477	319	1,334	32,222	1,252	3,591	545	5,574
NORTHERN LOWER PENINSULA														
Alcona	61	16	--	426	276	56	8	--	77	4,656	91	24	16	278
Alpena	218	47	--	44	124	74	29	--	31	2,068	42	6	3	204
Antrim	1	1	2	7	64	2	--	--	48	378	--	291	64	131
Arenac	2	--	--	31	9	--	--	--	115	867	6	12	--	17
Bay	--	--	--	--	--	--	--	--	35	43	--	6	--	1
Benzie	--	--	--	2	226	10	--	--	51	698	--	174	185	84
Charlevoix	13	1	2	3	64	39	3	--	78	165	--	195	87	46
Cheboygan	185	134	27	317	343	143	102	--	46	2,734	11	284	51	550
Clare	9	--	--	74	138	19	--	--	65	2,643	--	32	43	61
Crawford	4	3	--	1,951	773	98	1	--	5	1,909	--	66	19	94
Emmet	27	21	2	44	245	16	21	--	69	376	--	260	89	42
Gladwin	--	--	--	16	32	9	--	--	66	1,249	--	6	--	51
Grand Traverse	3	--	1	232	306	20	--	--	22	675	--	62	30	40
Iosco	18	--	2	93	465	52	--	--	50	1,052	11	4	--	164
Isabella	1	--	--	10	6	--	--	--	46	1,512	--	3	2	6
Kalkaska	--	2	1	100	880	48	--	--	27	1,475	--	317	27	78
Lake	--	--	--	482	502	27	--	--	83	2,445	--	155	71	78
Leelanau	7	--	--	--	14	1	--	--	102	9	--	75	40	1
Manistee	--	--	--	50	977	11	--	--	57	645	--	108	81	35
Mason	--	--	2	12	240	3	--	--	33	1,576	--	85	60	70
Mecosta	1	--	--	--	121	18	--	--	63	1,780	--	17	--	37
Midland	1	--	--	--	29	7	--	--	98	1,639	7	17	15	48
Missaukee	1	--	--	81	422	50	--	--	138	2,519	--	131	41	149
Montmorency	86	14	--	590	303	51	15	--	51	2,826	31	98	25	315
Newaygo	--	--	--	--	864	40	--	--	78	1,449	--	33	34	18
Oceana	6	--	7	--	108	18	--	--	66	637	--	21	53	9

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	11	--	--	497	131	39	--	--	41	3,020	8	14	4	189
Osceola	2	--	--	45	246	17	--	--	129	2,290	--	88	69	124
Oscoda	--	7	--	1,170	878	122	2	--	30	2,269	29	49	9	205
Otsego	2	16	9	415	444	204	28	--	38	1,537	--	426	68	245
Presque Isle	526	84	78	245	210	40	83	--	90	2,397	53	55	11	401
Roscommon	1	--	--	735	416	103	--	--	35	2,501	3	9	2	64
Wexford	2	--	--	124	2,059	29	--	--	53	1,599	--	148	71	74
Total	1,188	346	133	7,796	11,915	1,366	292	--	2,016	53,638	292	3,271	1,270	3,909
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	188	6	--	--	66	91	--	2	12	--
Barry	--	--	--	--	16	--	--	--	35	213	--	21	10	--
Berrien	--	--	--	--	--	--	--	--	79	11	--	28	33	1
Branch	--	--	--	--	--	--	--	--	62	--	--	14	--	--
Calhoun	--	--	--	--	--	--	--	--	169	6	--	90	24	--
Cass	--	--	--	--	--	--	--	--	57	2	--	51	16	--
Clinton	--	--	--	--	--	--	--	--	43	2	--	3	--	--
Eaton	--	--	--	--	--	--	--	--	62	1	--	18	11	--
Genessee	--	--	--	--	--	--	--	--	16	--	--	7	3	--
Gratiot	--	--	--	--	--	--	--	--	25	22	--	8	--	--
Hillsdale	--	--	--	--	--	--	--	--	17	--	--	10	--	--
Huron	--	--	--	--	4	--	--	--	9	119	15	2	--	8
Ingham	--	--	--	--	--	--	--	--	35	2	--	13	4	--
Ionia	--	--	--	--	--	--	--	--	9	9	--	15	9	--
Jackson	--	--	--	--	--	--	--	--	39	--	--	13	--	--
Kalamazoo	--	--	--	--	--	1	--	--	13	2	--	0	9	--
Kent	--	--	--	--	142	3	--	--	45	86	--	17	3	--
Lapeer	--	--	--	--	17	1	--	--	22	28	--	8	3	2
Lenawee	--	--	--	--	21	--	--	--	29	1	--	31	12	--
Livingston	--	--	--	--	--	--	--	--	13	1	--	1	--	--
Macomb	--	--	--	--	--	--	--	--	5	--	--	3	1	--
Monroe	--	--	--	--	--	--	--	--	9	--	--	9	--	--
Montcalm	--	--	--	--	120	20	--	--	106	360	--	12	9	3
Muskegon	--	--	--	--	35	6	--	--	36	306	--	0	43	2
Oakland	--	--	--	--	--	--	--	--	39	13	--	2	2	--
Ottawa	--	--	--	--	41	1	--	--	28	112	--	5	19	--
Saginaw	--	--	--	--	--	2	--	--	62	47	--	3	--	2
St. Clair	--	--	--	--	--	4	--	--	40	31	--	9	6	--
St. Joseph	--	--	--	--	--	--	--	--	95	2	--	16	--	--
Sanilac	--	--	--	--	--	--	--	--	7	82	2	1	--	3
Shiawassee	--	--	--	--	--	--	--	--	50	1	--	12	3	--
Tuscola	--	--	--	--	63	--	--	--	26	39	2	15	1	5
Van Buren	--	--	--	--	--	--	--	--	48	1	--	5	7	--
Washtenaw	--	--	--	--	--	--	--	--	30	--	--	9	5	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	647	44	--	--	1,426	1,590	19	453	245	26
State total	5,976	7,199	4,302	18,528	18,985	5,318	6,382	718	5,205	107,500	4,438	8,368	4,975	14,827

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	296	--	119	--	1,890	977	104	4	--	86	8,795
Chippewa	79	--	43	--	620	607	47	--	--	16	7,984
Delta	328	--	232	--	1,532	1,237	119	8	--	82	19,396
Luce	51	--	3	--	433	308	12	--	--	37	4,156
Mackinac	124	--	74	--	987	714	88	--	--	26	8,467
Menominee	163	--	100	--	987	688	137	10	--	47	13,740
Schoolcraft	214	--	116	--	1,056	823	82	--	--	60	8,827
Total	1,255	--	687	--	7,505	5,354	589	22	--	354	71,365
WESTERN UPPER PENINSULA											
Baraga	516	--	45	--	3,043	893	148	--	--	111	8,542
Dickinson	165	--	98	--	982	733	185	--	--	42	14,927
Gogebic	497	--	72	--	3,852	1,026	272	2	--	163	11,311
Houghton	613	--	77	--	3,455	1,153	278	3	--	151	10,093
Iron	555	--	71	--	3,582	1,315	522	16	--	181	18,000
Keweenaw	55	--	2	--	262	103	144	--	--	16	992
Marquette	548	--	206	--	3,852	2,767	678	4	--	154	25,572
Ontonagon	392	--	134	--	2,957	830	247	5	--	61	14,037
Total	3,341	--	705	--	21,985	8,820	2,474	30	--	879	103,474
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	56	364	972	50	--	6	7,433
Alpena	--	--	--	--	19	356	308	15	--	--	3,588
Antrim	2	--	9	--	402	344	6	--	--	2	1,754
Arenac	--	9	--	--	15	132	114	2	--	1	1,332
Bay	--	10	--	--	--	23	3	6	--	--	127
Benzie	11	--	--	--	673	452	194	219	--	44	3,023
Charlevoix	10	--	--	--	300	61	20	--	--	2	1,089
Cheboygan	1	--	2	--	521	921	162	3	--	1	6,538
Clare	5	--	--	--	144	563	987	179	1	69	5,032
Crawford	--	--	--	--	101	325	922	72	--	8	6,351
Emmet	2	--	1	--	495	121	72	--	--	6	1,909
Gladwin	--	33	2	--	--	291	243	33	--	4	2,035
Grand Traverse	6	--	1	--	238	333	192	52	--	19	2,232
Iosco	--	2	--	--	33	237	172	8	--	10	2,373
Isabella	--	9	--	--	4	137	190	33	--	2	1,961
Kalkaska	12	--	7	--	557	537	294	84	--	57	4,503
Lake	20	--	1	--	242	786	2,133	578	--	233	7,836
Leelanau	--	--	--	--	285	12	19	--	--	--	565
Manistee	--	--	--	--	381	289	556	174	--	65	3,429
Mason	--	--	--	--	180	336	734	297	--	47	3,675
Mecosta	2	--	1	--	53	140	127	90	--	22	2,472
Midland	--	23	--	--	17	447	221	67	--	1	2,637
Missaukee	1	1	1	--	323	693	768	136	--	37	5,492
Montmorency	--	--	1	--	213	466	750	27	--	2	5,864
Newaygo	5	--	1	10	108	611	2,013	725	--	121	6,110
Oceana	2	3	--	--	156	523	915	247	--	52	2,823

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	--	--	--	48	342	623	30	--	1	4,998
Osceola	12	--	--	--	352	455	418	100	--	66	4,413
Oscoda	--	--	--	--	81	339	951	59	--	2	6,202
Otsego	4	--	5	--	902	587	146	2	--	10	5,088
Presque Isle	--	--	2	--	122	427	150	6	--	--	4,980
Roscommon	--	--	--	--	8	305	1,479	146	--	9	5,816
Wexford	8	--	2	--	354	472	497	77	--	74	5,643
Total	103	90	36	10	7,383	12,427	17,351	3,517	1	973	129,323
SOUTHERN LOWER PENINSULA											
Allegan	--	--	1	6	8	211	532	265	--	35	1,423
Barry	--	1	1	19	121	109	539	89	--	51	1,225
Berrien	--	32	29	10	134	63	248	41	2	185	896
Branch	--	5	2	17	15	183	55	69	2	25	449
Calhoun	--	5	2	49	20	134	132	133	2	122	888
Cass	1	5	23	22	74	168	221	151	39	108	938
Clinton	--	--	--	7	7	32	57	10	13	--	174
Eaton	--	2	23	19	80	37	37	20	6	2	318
Genessee	--	1	--	1	12	22	30	23	1	1	117
Gratiot	--	6	--	--	9	48	117	33	--	--	268
Hillsdale	--	1	1	4	49	21	26	10	3	7	149
Huron	--	160	--	--	--	24	1	--	--	--	342
Ingham	--	7	2	6	20	21	34	24	--	6	174
Ionia	--	--	--	--	9	15	67	3	--	4	140
Jackson	--	1	1	40	--	39	410	115	17	33	708
Kalamazoo	--	2	1	10	1	44	139	6	--	30	258
Kent	--	1	1	4	77	126	524	87	--	19	1,135
Lapeer	--	24	1	4	25	143	67	79	--	1	425
Lenawee	--	5	1	20	70	26	38	34	4	2	294
Livingston	--	--	--	9	--	29	232	71	--	9	365
Macomb	--	1	1	--	9	26	--	3	--	--	49
Monroe	--	15	--	15	9	18	81	43	6	2	207
Montcalm	--	--	10	2	18	307	617	290	1	13	1,888
Muskegon	--	--	--	--	8	282	1,162	497	--	66	2,443
Oakland	--	1	1	9	5	28	173	69	1	6	349
Ottawa	--	1	1	--	25	83	246	77	--	4	643
Saginaw	--	14	--	9	19	142	140	93	--	1	534
St. Clair	--	100	--	1	19	92	91	98	--	2	493
St. Joseph	--	--	5	65	14	139	480	118	109	37	1,080
Sanilac	--	12	--	--	3	38	5	--	--	--	153
Shiawassee	--	3	--	6	8	32	114	35	--	8	272
Tuscola	--	44	--	--	15	66	20	8	--	6	310
Van Buren	--	13	5	17	34	120	336	76	1	69	732
Washtenaw	--	3	--	21	8	44	164	169	22	10	485
Wayne	--	--	--	--	--	--	--	--	--	--	--
Total	1	465	112	392	925	2,912	7,135	2,839	229	864	20,324
State total	4,700	555	1,540	402	37,798	29,513	27,549	6,408	230	3,070	324,486

Table 21.-- Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1990

(In thousand board feet) 1/

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	576	915	755	1,108	990	629	257	178	123	2,717	505	401	5,145	632
Chippewa	1,247	1,309	809	2,242	578	280	989	79	88	6,060	530	102	1,252	415
Delta	2,711	3,662	1,685	3,646	3,459	1,658	2,669	287	224	11,019	1,592	633	1,263	2,637
Luce	174	803	453	1,179	1,371	1,099	311	64	16	1,941	195	59	2,690	316
Mackinac	1,490	1,083	419	601	710	377	1,043	63	60	6,788	660	301	1,407	1,588
Menominee	2,986	1,836	765	1,167	2,922	2,868	1,756	234	598	9,852	486	769	296	4,285
Schoolcraft	1,510	2,198	797	1,517	1,324	569	793	169	78	3,591	549	286	1,813	1,041
Total	10,694	11,806	5,683	11,460	11,354	7,480	7,818	1,074	1,187	41,968	4,517	2,551	13,866	10,914
WESTERN UPPER PENINSULA														
Baraga	268	314	1,177	603	399	508	971	76	266	4,018	120	437	144	927
Dickinson	711	2,934	1,203	2,246	2,772	1,414	1,704	285	114	13,355	431	745	244	955
Gogebic	7	454	73	720	1,239	243	1,242	108	729	6,236	7	1,627	93	536
Houghton	209	354	950	675	2,250	1,376	505	76	383	4,053	137	1,063	199	994
Iron	370	1,035	1,004	1,277	2,948	3,056	4,494	189	469	11,065	400	2,138	157	2,931
Keweenaw	51	5	--	--	65	562	116	3	20	501	--	40	20	195
Marquette	653	1,991	1,591	7,288	5,232	4,991	1,607	260	255	13,717	797	881	679	3,550
Ontonagon	51	55	132	584	856	656	406	70	786	12,679	162	5,650	26	776
Total	2,320	7,142	6,130	13,393	15,761	12,806	11,045	1,067	3,022	65,624	2,054	12,581	1,562	10,864
NORTHERN LOWER PENINSULA														
Alcona	111	41	--	1,425	1,558	269	21	--	292	12,597	134	68	53	521
Alpena	633	168	1	162	684	383	99	--	108	5,129	61	20	15	500
Antrim	4	3	13	14	296	14	2	--	215	850	--	1,396	310	183
Arenac	11	--	--	80	39	2	--	--	466	2,262	9	63	3	36
Bay	--	--	--	--	--	1	--	--	135	158	--	30	--	5
Benzie	1	--	--	4	1,221	62	--	--	162	1,202	--	557	836	298
Charlevoix	64	5	10	17	357	220	17	--	394	511	--	974	476	189
Cheboygan	763	493	79	1,109	1,792	742	372	--	158	5,454	17	1,129	195	1,125
Clare	42	--	--	187	644	70	--	--	178	5,123	--	52	76	89
Crawford	9	15	3	6,302	3,700	557	5	--	8	5,093	--	289	86	134
Emmet	132	105	10	95	1,222	92	103	--	352	872	--	1,319	460	120
Gladwin	--	--	--	50	144	56	--	--	231	3,473	--	33	--	176
Grand Traverse	14	--	8	529	1,361	96	--	--	62	1,242	--	248	133	146
Iosco	88	--	7	261	2,614	296	2	--	200	3,013	16	9	2	268
Isabella	2	--	--	25	24	2	--	--	151	3,056	--	19	5	14
Kalkaska	2	6	7	360	3,714	232	3	--	93	3,065	--	1,389	103	155
Lake	1	--	--	1,056	2,592	158	--	--	228	4,900	--	382	139	113
Leelanau	25	--	3	--	80	8	--	--	525	40	--	385	218	4
Manistee	2	--	--	110	5,454	64	--	--	189	1,342	--	284	296	91
Mason	--	--	13	28	1,381	18	--	--	113	2,923	--	294	202	107
Mecosta	2	--	--	1	596	62	--	--	220	3,516	--	88	3	92
Midland	4	--	--	1	136	45	--	--	297	4,643	11	88	50	84
Missaukee	7	--	--	242	2,023	286	--	--	449	5,020	--	419	140	364
Montmorency	226	50	1	1,972	1,710	276	49	--	175	7,232	46	411	110	651
Newaygo	1	--	--	--	4,932	221	--	--	336	3,704	--	178	168	36
Oceana	25	--	40	--	606	105	--	--	313	1,358	--	81	285	40

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	55	--	--	1,677	709	222	--	--	181	10,219	12	65	28	517
Osceola	11	--	--	99	1,375	74	--	--	410	4,360	--	296	268	237
Oscoda	--	18	--	4,377	4,532	656	5	--	121	6,224	43	176	30	310
Otsego	7	50	31	1,401	2,190	1,076	87	--	157	4,375	--	1,897	307	375
Presque Isle	1,622	305	198	783	1,138	207	247	--	293	5,764	78	198	38	835
Roscommon	6	--	--	1,885	2,249	588	--	--	167	7,194	4	49	12	248
Wexford	8	--	--	342	10,666	165	--	--	202	2,981	--	427	278	127
Total	3,878	1,259	424	24,594	61,739	7,325	1,012	--	7,581	128,895	431	13,313	5,325	8,190
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	1,081	31	--	--	338	267	--	12	71	--
Barry	--	--	--	--	91	--	--	--	180	839	--	105	59	--
Berrien	--	--	--	--	--	--	--	--	406	50	--	142	182	6
Branch	--	--	--	--	--	--	--	--	323	1	--	71	--	--
Calhoun	--	--	--	--	--	--	--	--	873	21	--	461	133	--
Cass	--	--	--	--	--	--	--	--	293	10	--	261	87	--
Clinton	--	--	--	--	--	--	--	--	218	13	--	18	--	--
Eaton	--	--	--	--	--	--	--	--	317	7	--	90	65	--
Genessee	--	--	--	--	--	--	--	--	83	--	--	40	17	--
Gratiot	--	--	--	--	--	3	--	--	132	70	--	46	--	--
Hillsdale	--	--	--	--	--	--	--	--	89	--	--	56	--	--
Huron	--	--	--	--	27	2	--	--	48	547	76	15	2	43
Ingham	--	--	--	--	--	--	--	--	179	10	--	68	23	--
Ionia	--	--	--	--	--	--	--	--	53	39	--	76	52	--
Jackson	--	--	--	--	--	--	--	--	206	2	--	70	--	--
Kalamazoo	--	--	--	--	--	5	--	--	70	13	--	--	51	--
Kent	--	--	--	--	788	14	--	--	234	161	--	87	19	--
Lapeer	--	--	--	1	99	7	--	--	113	127	--	44	18	10
Lenawee	--	--	--	--	120	--	--	--	148	8	--	163	69	--
Livingston	--	--	--	--	2	2	2	--	68	4	--	7	--	--
Macomb	--	--	--	--	--	--	--	--	26	1	--	17	9	--
Monroe	--	--	--	--	--	--	--	--	49	--	--	52	--	--
Montcalm	1	--	--	--	678	116	--	--	533	976	--	62	42	11
Muskegon	--	--	--	--	173	32	--	--	134	600	--	--	202	5
Oakland	--	--	--	--	--	1	--	--	208	61	--	14	13	--
Ottawa	--	--	--	--	231	5	--	--	135	194	--	28	102	--
Saginaw	--	--	--	--	--	13	--	--	327	217	--	16	--	12
St. Clair	--	--	--	--	--	24	--	--	209	139	--	47	32	--
St. Joseph	--	--	--	--	--	--	--	--	488	13	--	81	--	--
Sanilac	--	--	--	--	--	--	--	--	35	375	10	6	3	18
Shiawassee	--	--	--	--	--	--	--	--	260	7	--	62	17	--
Tuscola	--	--	--	--	363	--	--	--	138	175	15	74	4	26
Van Buren	1	--	--	--	--	1	--	--	246	5	--	24	37	--
Washtenaw	--	--	--	--	--	--	--	--	156	1	--	52	28	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	2	--	--	1	3,653	256	2	--	7,315	4,953	101	2,367	1,337	131
State total	16,894	20,207	12,237	49,448	92,507	27,867	19,877	2,141	19,105	241,440	7,103	30,812	22,090	30,099

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	1,025	--	181	--	8,154	2,548	51	23	--	197	27,110
Chippewa	262	--	64	--	2,504	1,357	103	1	--	27	20,298
Delta	986	--	343	--	5,152	2,555	109	39	--	175	46,504
Luce	191	--	5	--	2,050	1,141	12	--	--	71	14,141
Mackinac	407	--	108	--	4,180	1,618	276	--	--	54	23,233
Menominee	453	--	149	--	3,512	1,515	333	35	--	79	36,896
Schoolcraft	669	--	169	--	3,814	2,026	40	--	--	125	23,078
Total	3,993	--	1,019	--	29,366	12,760	924	98	--	728	191,260
WESTERN UPPER PENINSULA											
Baraga	2,359	--	97	--	14,815	3,035	362	3	--	218	31,117
Dickinson	502	--	168	--	3,822	1,979	652	--	--	61	36,297
Gogebic	1,862	--	127	--	17,913	2,258	478	11	--	265	36,228
Houghton	2,612	--	154	--	15,811	3,345	779	7	--	240	36,172
Iron	2,296	--	136	--	16,726	3,806	1,944	13	--	403	56,857
Keweenaw	244	--	3	--	1,203	337	728	--	--	23	4,116
Marquette	1,807	--	307	--	16,769	9,401	2,466	23	--	257	74,522
Ontonagon	1,269	--	209	--	9,653	1,827	365	25	--	116	36,353
Total	12,951	--	1,201	--	96,712	25,988	7,774	82	--	1,583	311,662
NORTHERN LOWER PENINSULA											
Alcona	1	--	--	--	228	1,044	3,634	134	--	16	22,147
Alpena	--	--	--	--	72	1,369	1,311	54	--	1	10,770
Antrim	11	--	50	--	1,940	594	3	--	--	14	5,912
Arenac	1	48	1	1	87	511	512	14	1	9	4,156
Bay	--	57	--	--	--	92	16	30	--	--	524
Benzie	21	--	--	--	3,018	1,032	665	1,015	1	137	10,232
Charlevoix	61	--	2	--	1,681	275	101	--	--	11	5,365
Cheboygan	7	--	11	--	1,994	1,836	685	11	1	5	17,978
Clare	15	2	--	1	382	1,309	3,741	655	8	178	12,752
Crawford	--	--	3	1	357	636	3,492	234	--	14	20,938
Emmet	11	--	4	--	2,666	405	379	--	--	30	8,377
Gladwin	--	170	14	--	1	1,108	1,074	133	--	10	6,673
Grand Traverse	20	--	4	1	1,164	899	645	177	--	40	6,789
Iosco	2	12	--	--	170	740	618	16	--	17	8,351
Isabella	--	52	--	--	21	433	786	135	--	7	4,732
Kalkaska	38	--	35	--	2,699	1,427	1,023	75	--	139	14,565
Lake	31	--	6	--	578	1,627	8,352	1,146	--	400	21,709
Leelanau	3	--	--	--	1,614	61	95	1	1	1	3,064
Manistee	1	--	2	--	1,709	993	2,215	394	--	205	13,351
Mason	4	--	2	--	712	841	2,879	758	--	78	10,353
Mecosta	5	--	6	1	230	398	434	187	--	95	5,936
Midland	2	88	1	2	47	1,248	782	233	1	5	7,768
Missaukee	3	4	10	--	1,378	1,930	2,611	194	2	112	15,194
Montmorency	--	--	6	--	942	1,444	2,789	61	--	4	18,155
Newaygo	17	1	6	55	553	2,700	8,562	2,048	--	331	23,849
Oceana	9	18	1	--	853	2,104	4,063	607	--	209	10,717

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	1	--	2	--	208	1,290	2,599	45	--	7	17,837
Osceola	33	2	1	3	1,480	1,289	1,306	119	--	220	11,583
Oscoda	--	--	--	--	241	844	3,053	136	--	7	20,773
Otsego	23	--	27	--	4,260	1,120	713	9	--	42	18,147
Presque Isle	3	--	10	--	490	954	514	6	--	--	13,683
Roscommon	1	--	--	--	50	1,326	7,191	455	--	18	21,443
Wexford	25	--	10	--	1,680	1,206	1,778	129	--	223	20,247
Total	349	454	214	65	33,505	35,085	68,621	9,211	15	2,585	414,070
SOUTHERN LOWER PENINSULA											
Allegan	1	2	9	32	42	569	2,138	708	--	182	5,483
Barry	1	6	7	104	682	548	2,719	372	--	259	5,972
Berrien	1	165	153	54	755	327	1,305	212	15	949	4,722
Branch	--	28	14	98	81	886	245	316	12	129	2,204
Calhoun	1	26	14	272	115	686	682	692	15	626	4,617
Cass	4	34	116	126	420	661	974	606	217	555	4,364
Clinton	--	1	--	38	37	166	299	56	76	1	923
Eaton	--	13	120	111	452	194	195	97	31	13	1,705
Genessee	--	5	2	5	74	109	159	120	7	6	627
Gratiot	--	29	--	--	53	249	608	170	1	--	1,361
Hillsdale	--	5	5	26	281	105	139	56	20	35	817
Huron	--	818	2	--	2	125	8	2	--	2	1,719
Ingham	--	35	10	31	124	105	182	128	1	32	928
Ionia	--	--	3	1	50	73	349	21	3	22	742
Jackson	1	10	6	224	--	203	2,135	601	94	171	3,723
Kalamazoo	1	14	4	55	6	224	675	32	3	153	1,306
Kent	--	6	11	28	436	644	2,655	407	--	94	5,584
Lapeer	2	124	9	24	138	731	350	413	--	6	2,216
Lenawee	--	23	4	114	394	132	198	180	26	10	1,589
Livingston	--	--	--	53	--	147	1,207	366	--	49	1,907
Macomb	1	5	5	2	52	134	--	16	--	--	268
Monroe	--	76	3	82	50	95	429	225	34	15	1,110
Montcalm	--	--	55	18	97	1,188	2,878	1,159	4	68	7,886
Muskegon	2	--	1	1	32	1,138	4,349	975	--	103	7,747
Oakland	--	10	5	52	25	141	900	359	6	32	1,827
Ottawa	3	10	7	2	136	399	1,085	204	--	17	2,558
Saginaw	--	71	1	52	110	727	726	487	1	4	2,764
St. Clair	2	511	2	6	113	472	473	507	--	12	2,549
St. Joseph	--	--	27	360	79	561	2,369	477	603	197	5,255
Sanilac	--	59	--	--	21	195	28	3	--	--	753
Shiawassee	--	17	--	31	50	168	591	189	2	42	1,436
Tuscola	--	223	1	--	90	337	101	43	2	35	1,627
Van Buren	1	69	25	99	193	422	1,585	223	6	362	3,299
Washtenaw	--	18	--	124	50	225	852	883	127	60	2,576
Wayne	--	--	--	--	--	--	--	--	--	--	--
Total	21	2,413	621	2,225	5,240	13,086	33,588	11,305	1,306	4,241	94,164
State total	17,314	2,867	3,055	2,290	164,823	86,919	110,907	20,696	1,321	9,137	1,011,156

Table 22.--Harvest residues generated by industrial roundwood harvesting from timberland by Forest Survey Unit, county, and species group, Michigan, 1990

(In thousand cubic feet)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	57	99	114	149	87	45	28	20	13	313	82	44	311	90
Chippewa	112	127	121	298	63	25	97	8	5	585	85	10	84	42
Delta	263	391	223	494	326	123	282	32	24	1,261	213	65	181	369
Luce	18	87	67	160	103	70	34	7	2	171	31	7	147	33
Mackinac	134	105	62	64	69	26	103	7	6	604	105	26	109	162
Menominee	285	199	116	158	222	176	181	25	38	969	76	60	63	420
Schoolcraft	143	235	120	205	147	50	83	18	10	407	88	36	146	119
Total	1,012	1,243	823	1,528	1,017	515	808	117	98	4,310	680	248	1,041	1,235
WESTERN UPPER PENINSULA														
Baraga	23	33	98	74	33	34	84	7	22	397	12	35	30	106
Dickinson	76	318	183	302	277	105	176	31	11	1,535	68	59	56	95
Gogebic	--	49	8	90	103	15	126	9	56	665	--	124	21	73
Houghton	19	38	73	71	147	83	48	7	33	371	18	76	47	133
Iron	33	112	132	164	230	185	463	18	49	1,176	31	138	36	341
Keweenaw	4	--	--	--	3	32	8	--	1	44	--	2	4	17
Marquette	65	216	229	837	361	310	152	26	31	1,584	127	97	118	448
Ontonagon	4	5	10	67	57	38	32	5	51	1,027	16	317	6	88
Total	224	771	733	1,605	1,211	802	1,089	103	254	6,799	272	848	318	1,301
NORTHERN LOWER PENINSULA														
Alcona	11	--	--	34	89	13	--	--	20	991	21	2	4	55
Alpena	59	8	--	12	41	19	5	--	8	429	10	--	--	30
Antrim	--	--	1	2	22	1	--	--	11	58	--	73	19	5
Arenac	1	--	--	1	2	--	--	--	18	188	2	3	--	3
Bay	--	--	--	--	--	--	--	--	5	11	--	2	--	--
Benzie	--	--	--	--	68	3	--	--	11	105	--	34	54	17
Charlevoix	5	--	--	1	19	12	1	--	20	40	--	52	24	11
Cheboygan	63	16	9	46	113	39	21	--	8	272	3	51	9	62
Clare	3	--	--	4	31	6	--	--	9	520	--	3	10	11
Crawford	--	--	--	336	261	32	--	--	--	286	--	14	4	4
Emmet	12	8	--	13	82	5	8	--	18	55	--	68	23	6
Gladwin	--	--	--	2	8	3	--	--	10	274	--	2	--	14
Grand Traverse	1	--	--	66	95	6	--	--	5	145	--	13	12	9
Iosco	7	--	--	8	147	16	--	--	11	222	3	--	--	34
Isabella	--	--	--	--	1	--	--	--	6	161	--	--	--	--
Kalkaska	--	--	--	25	295	15	--	--	7	312	--	74	11	11
Lake	--	--	--	131	143	8	--	--	18	469	--	24	16	12
Leelanau	1	--	--	--	5	--	--	--	28	2	--	19	11	--
Manistee	--	--	--	11	308	3	--	--	12	123	--	19	23	5
Mason	--	--	1	3	76	1	--	--	5	221	--	17	16	12
Mecosta	--	--	--	--	41	6	--	--	14	320	--	5	--	7
Midland	--	--	--	--	6	2	--	--	13	243	1	5	4	8
Missaukee	--	--	--	26	140	16	--	--	35	545	--	32	21	34
Montmorency	21	3	--	105	99	15	3	--	14	571	7	19	6	60
Newaygo	--	--	--	--	279	13	--	--	20	275	--	8	10	2
Oceana	3	--	2	--	35	6	--	--	18	120	--	4	15	2

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
NORHTERN LOWER PENINSULA (continued)														
Ogemaw	4	--	--	98	43	13	--	--	9	680	1	3	--	35
Osceola	1	--	--	13	80	5	--	--	32	431	--	20	32	24
Oscoda	--	--	--	221	292	35	--	--	8	387	7	9	--	30
Otsego	--	--	3	54	151	57	5	--	8	238	--	89	13	11
Presque Isle	148	11	28	50	69	11	19	--	22	492	13	10	3	79
Roscommon	--	--	--	209	135	33	--	--	8	574	--	2	--	17
Wexford	1	--	--	35	654	9	--	--	13	305	--	31	28	13
Total	341	46	44	1,506	3,830	403	62	--	444	10,065	68	707	368	623
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	60	2	--	--	17	9	--	--	3	--
Barry	--	--	--	--	5	--	--	--	9	45	--	6	3	--
Berrien	--	--	--	--	--	--	--	--	21	3	--	8	9	--
Branch	--	--	--	--	--	--	--	--	16	--	--	3	--	--
Calhoun	--	--	--	--	--	--	--	--	45	2	--	24	7	--
Cass	--	--	--	--	--	--	--	--	16	--	--	14	5	--
Clinton	--	--	--	--	--	--	--	--	12	--	--	--	--	--
Eaton	--	--	--	--	--	--	--	--	16	--	--	5	3	--
Genessee	--	--	--	--	--	--	--	--	5	--	--	2	--	--
Gratiot	--	--	--	--	--	--	--	--	7	5	--	2	--	--
Hillsdale	--	--	--	--	--	--	--	--	5	--	--	2	--	--
Huron	--	--	--	--	1	--	--	--	2	30	--	--	--	2
Ingham	--	--	--	--	--	--	--	--	9	--	--	3	--	--
Ionia	--	--	--	--	--	--	--	--	2	2	--	3	3	--
Jackson	--	--	--	--	--	--	--	--	10	--	--	3	--	--
Kalamazoo	--	--	--	--	--	--	--	--	3	--	--	--	3	--
Kent	--	--	--	--	46	1	--	--	14	17	--	5	--	--
Lapeer	--	--	--	--	6	--	--	--	6	7	--	2	--	--
Lenawee	--	--	--	--	7	--	--	--	8	--	--	8	3	--
Livingston	--	--	--	--	--	--	--	--	3	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	--	1	--	--	--	--	--
Monroe	--	--	--	--	--	--	--	--	2	--	--	2	--	--
Montcalm	--	--	--	--	39	6	--	--	28	54	--	3	3	--
Muskegon	--	--	--	--	11	1	--	--	9	42	--	--	13	1
Oakland	--	--	--	--	--	--	--	--	10	3	--	--	--	--
Ottawa	--	--	--	--	13	--	--	--	8	18	--	1	6	--
Saginaw	--	--	--	--	--	1	--	--	16	11	--	--	--	--
St. Clair	--	--	--	--	--	1	--	--	10	9	--	2	2	--
St. Joseph	--	--	--	--	--	--	--	--	25	--	--	5	--	--
Sanilac	--	--	--	--	--	--	--	--	2	21	--	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	13	--	--	3	--	--
Tuscola	--	--	--	--	20	--	--	--	7	11	--	4	--	1
Van Buren	--	--	--	--	--	--	--	--	13	--	--	1	2	--
Washtenaw	--	--	--	--	--	--	--	--	8	--	--	2	1	--
Wayne	--	--	--	--	--	--	--	--	2	--	--	2	--	--
Total	--	--	--	--	208	12	--	--	380	289	3	115	66	4
State total	1,577	2,060	1,600	4,639	6,266	1,732	1,959	220	1,176	21,463	1,023	1,918	1,793	3,163

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	151	--	29	--	827	237	22	--	--	21	2,739
Chippewa	44	--	11	--	250	93	11	--	--	3	2,074
Delta	184	--	55	--	826	299	26	1	--	20	5,658
Luce	25	--	1	--	174	80	2	--	--	8	1,227
Mackinac	67	--	17	--	408	131	18	--	--	5	2,228
Menominee	97	--	24	--	488	166	31	3	--	11	3,808
Schoolcraft	119	--	27	--	541	202	19	--	--	14	2,729
Total	687	--	164	--	3,514	1,208	129	4	--	82	20,463
WESTERN UPPER PENINSULA											
Baraga	197	--	8	--	1,097	221	32	--	--	26	2,569
Dickinson	93	--	23	--	479	181	42	--	--	10	4,120
Gogebic	240	--	17	--	1,548	246	64	--	--	38	3,492
Houghton	251	--	17	--	1,335	281	64	--	--	36	3,148
Iron	246	--	18	--	1,482	329	132	2	--	44	5,361
Keweenaw	23	--	--	--	114	27	40	--	--	3	322
Marquette	293	--	48	--	1,694	698	147	--	--	37	7,518
Ontonagon	133	--	16	--	824	152	33	2	--	15	2,898
Total	1,476	--	147	--	8,573	2,135	554	4	--	209	29,428
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	11	65	153	7	--	--	1,476
Alpena	--	--	--	--	4	72	52	2	--	--	751
Antrim	--	--	2	--	107	22	1	--	--	--	324
Arenac	--	2	--	--	5	23	17	--	--	--	265
Bay	--	2	--	--	--	3	--	1	--	--	24
Benzie	3	--	--	--	195	87	34	43	--	6	660
Charlevoix	3	--	--	--	90	15	4	--	--	--	297
Cheboygan	--	--	--	--	91	70	25	--	--	--	898
Clare	3	--	--	--	71	96	180	36	--	17	1,000
Crawford	--	--	--	--	19	37	150	15	--	1	1,159
Emmet	--	--	--	--	136	18	15	--	--	2	469
Gladwin	--	8	--	--	--	57	41	6	--	--	425
Grand Traverse	3	--	--	--	66	72	30	9	--	3	535
Iosco	--	--	--	--	8	43	27	1	--	1	528
Isabella	--	2	--	--	--	13	25	5	--	--	213
Kalkaska	6	--	2	--	172	110	58	18	--	13	1,129
Lake	3	--	--	--	71	136	398	101	--	45	1,575
Leelanau	--	--	--	--	85	3	4	--	--	--	158
Manistee	--	--	--	--	107	46	103	31	--	11	802
Mason	--	--	--	--	46	52	129	39	--	6	624
Mecosta	--	--	--	--	17	26	24	12	--	5	477
Midland	--	5	--	--	10	59	31	12	--	--	399
Missaukee	--	--	--	--	127	162	151	24	--	8	1,321
Montmorency	--	--	--	--	43	82	124	4	--	--	1,176
Newaygo	1	--	--	3	34	151	362	95	--	25	1,278
Oceana	--	--	--	--	51	110	167	26	--	12	571

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	--	--	--	15	75	112	6	--	--	1,094
Osceola	6	--	--	--	129	91	76	17	--	13	970
Oscoda	--	--	--	--	12	42	136	10	--	--	1,189
Otsego	--	--	2	--	208	36	27	--	--	2	904
Presque Isle	--	--	--	--	28	74	26	1	--	--	1,084
Roscommon	--	--	--	--	2	76	305	30	--	2	1,393
Wexford	3	--	--	--	110	98	99	15	--	15	1,429
Total	31	19	6	3	2,070	2,122	3,086	566	--	187	26,597
SOUTHERN LOWER PENINSULA											
Allegan	--	--	--	2	2	24	82	24	--	9	234
Barry	--	--	--	5	37	28	110	16	--	14	278
Berrien	--	9	9	3	43	16	61	9	--	50	241
Branch	--	2	--	5	5	46	9	13	--	6	105
Calhoun	--	1	--	13	5	35	27	28	--	32	219
Cass	--	1	6	6	21	32	39	22	11	28	201
Clinton	--	--	--	2	2	8	12	3	5	--	44
Eaton	--	--	6	5	25	10	8	4	2	--	84
Genessee	--	--	--	--	4	6	6	4	--	--	27
Gratiot	--	2	--	--	2	13	25	7	--	--	63
Hillsdale	--	--	--	--	15	6	5	3	--	2	38
Huron	--	43	--	--	--	6	--	--	--	--	87
Ingham	--	2	--	2	6	6	7	5	--	2	42
Ionia	--	--	--	--	2	4	15	--	--	1	32
Jackson	--	--	--	11	--	10	86	25	5	8	158
Kalamazoo	--	--	--	3	--	12	25	1	--	8	55
Kent	--	--	--	--	25	32	111	20	--	5	276
Lapeer	--	6	--	--	9	38	13	17	--	--	104
Lenawee	--	1	--	5	21	7	9	7	--	--	76
Livingston	--	--	--	3	--	8	48	15	--	2	79
Macomb	--	--	--	--	2	7	--	--	--	--	10
Monroe	--	3	--	4	2	5	16	10	2	--	46
Montcalm	--	--	3	--	7	58	115	47	--	2	365
Muskegon	--	--	--	--	2	67	182	36	--	12	376
Oakland	--	--	--	3	2	8	36	14	--	2	78
Ottawa	--	--	--	--	7	20	45	6	--	--	124
Saginaw	--	3	--	3	5	38	29	21	--	--	127
St. Clair	--	27	--	--	5	24	19	20	--	--	119
St. Joseph	--	--	2	18	5	27	95	18	29	10	234
Sanilac	--	3	--	--	--	10	--	--	--	--	36
Shiawassee	--	--	--	2	2	8	24	7	--	2	61
Tuscola	--	12	--	--	6	18	4	2	--	2	87
Van Buren	--	4	1	5	11	19	63	7	--	18	144
Washtenaw	--	--	--	6	2	12	35	37	6	2	111
Wayne	--	--	--	--	--	2	10	5	--	--	21
Total	--	119	27	106	282	670	1,371	453	60	217	4,382
State total	2,194	138	344	109	14,439	6,135	5,140	1,027	60	695	80,870

Table 23.-- Residue produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Michigan, 1990

In thousand tons, green weight)

Type of use	Wood residue: Total Softwood	Wood residue: Total Hardwood	Wood residue: Coarse 1/ Softwood	Wood residue: Coarse 1/ Hardwood	Wood residue: Fine 2/ Softwood	Wood residue: Fine 2/ Hardwood	Bark Softwood	Bark Hardwood
EASTERN UPPER PENINSULA								
All counties								
Fiber products	37.34	79.52	35.82	76.21	1.52	3.31	--	--
Industrial fuel	7.93	50.64	4.49	8.06	3.44	42.58	17.38	28.89
Domestic fuel	2.62	9.09	2.62	6.97	--	2.12	0.43	5.20
Miscellaneous 3/	19.78	6.37	1.07	--	18.71	6.37	4.85	4.35
Not used	4.08	10.01	1.34	2.45	2.74	7.56	1.55	4.55
Total	71.75	155.63	45.34	93.69	26.41	61.94	24.21	42.99
WESTERN UPPER PENINSULA								
All counties								
Fiber products	3.05	126.86	2.64	113.45	0.41	13.41	--	--
Charcoal	--	2.03	--	--	--	2.03	--	--
Industrial fuel	24.22	71.71	9.51	11.75	14.71	59.96	7.47	52.64
Domestic fuel	1.70	2.33	1.70	2.33	--	--	0.62	1.03
Miscellaneous 3/	1.41	6.53	--	--	1.41	6.53	--	0.08
Not used	1.10	3.44	0.53	0.24	0.57	3.20	0.27	3.80
Total	31.48	212.90	14.38	127.77	17.10	85.13	8.36	57.55
NORTHERN LOWER PENINSULA								
All counties								
Fiber products	28.97	165.21	27.81	153.54	1.16	11.67	0.85	8.45
Industrial fuel	90.58	104.74	68.66	59.81	21.92	44.93	13.60	18.09
Domestic fuel	3.67	39.36	3.32	39.34	0.35	0.02	1.15	13.51
Miscellaneous 3/	52.92	113.33	11.28	9.77	41.64	103.56	31.84	72.55
Not used	2.61	20.43	1.89	15.51	0.72	4.92	0.96	6.55
Total	178.75	443.07	112.96	277.97	65.79	165.10	48.40	119.15
SOUTHERN LOWER PENINSULA								
All counties								
Fiber products	0.11	64.82	0.11	64.82	--	--	--	--
Industrial fuel	0.91	34.40	0.91	10.23	--	24.17	0.39	0.54
Domestic fuel	0.33	33.73	0.33	33.71	--	0.02	0.13	7.38
Miscellaneous 3/	2.05	74.84	0.81	20.46	1.24	54.38	0.96	47.70
Not used	0.05	5.35	0.03	3.59	0.02	1.76	0.01	1.59
Total	3.45	213.14	2.19	132.81	1.26	80.33	1.49	57.21
STATE TOTAL								
All counties								
Fiber products	69.47	436.41	66.38	408.02	3.09	28.39	0.85	8.45
Charcoal	--	2.03	--	--	--	2.03	--	--
Industrial fuel	123.64	261.49	83.57	89.85	40.07	171.64	38.84	100.16
Domestic fuel	8.32	84.51	7.97	82.35	0.35	2.16	2.33	27.12
Miscellaneous 3/	76.16	201.07	13.16	30.23	63.00	170.84	37.65	124.68
Not used	7.84	39.23	3.79	21.79	4.05	17.44	2.79	16.49
Total	285.43	1,024.74	174.87	632.24	110.56	392.50	82.46	276.90

1/ Suitable for chipping such as slabs, edgings, veneer cores, etc.

2/ Not suitable for chipping such as sawdust, veneer clippings, etc.

3/ Livestock bedding, mulch, small dimension, and specialty items.

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Hackett, Ronald L.; Pilon, John.
1993. **Michigan timber industry—an assessment of timber product output and use, 1990**. Resour. Bull. NC-144. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 56 p.

Discusses recent Michigan forest industry trends; production and receipts of pulpwood, saw logs, and veneer logs; and production of other timber products in 1990. Reports on logging residue, on wood and bark residue generated at primary wood-using mills, and on disposition of this mill residue.

KEY WORDS: Pulpwood, saw logs, veneer logs, residue.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.